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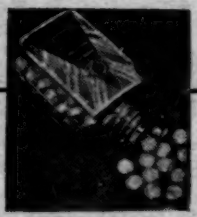

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 5 1945

SOME APPLICATIONS OF THE SURGICAL LESSONS OF WAR TO CIVIL PRACTICE

BY

W. H. OGILVIE, M.Ch., F.R.C.S.

Major-General

Now that the European phase of the second world war appears to be entering its final stages, it may be well to consider briefly what war has taught surgery and what it has taught surgeons, and how the lessons learned in the field can be applied to the teaching and practice of surgery in civil life.

The surgery of wounds in this war has passed through three phases. In the first, treatment by the closed plaster method was the rule; in the second, which was a period of long communications and poor supplies, wounds were excised and drained, the limb was immobilized in a padded plaster case or some form of plaster box splint, and closure by secondary suture or skin grafting was attempted about the third week, or as soon as the surface was covered with healthy granulations; in the third phase, which has been helped by the advent of penicillin, the wounds are excised by the forward groups and closed by delayed primary suture at the base between the fourth and the sixth day.

These successive steps should be regarded as a gradual evolution to meet changing circumstances rather than as an advance in method due to surgical enterprise. Each step was the right one at the time. The closed plaster method is safe and gives excellent results under desperate conditions, when the wounded arrive in numbers too great to allow frequent supervision after operation. Free drainage, immobilization without constriction, chemotherapy, and the provision of skin cover at a later date are the only possible line of treatment in a swiftly moving campaign where all supplies are poor and many days of rough travel separate the forward operating units from the base hospitals. Such conditions are liable to recur, and where they do three-hourly penicillin, wound dressing under theatre conditions, and all the ritual of war surgery in the British armies of 1945 would be out of the question. When, however, conditions become good in a surgical sense—that is, when advance is steady and retreat unthinkable, when air cover ensures good hospital facilities and uninterrupted supplies, when advanced surgical centres are well placed and well administered and base hospitals are within easy reach by a good evacuation route—early closure, by delayed primary suture or by skin graft, becomes the rule. Even better conditions prevail in civil traumatic surgery, for the injured usually receive their first-aid and definitive treatment at the same hospital, and we can expect that the same methods will prove their value.

Two-stage Closure

The policy of delayed primary suture is a return to that which prevailed in the closing years of the war of 1914–18, but there is one important difference. In the last war delayed primary suture led, in many centres, to the practice of primary suture. In this war primary suture has been condemned for all wounds except those of the head, face, and trunk, partly because it has been tried repeatedly and found more than wanting, still more because it transgresses those basic principles which each war teaches us afresh. Recent wounds freshly excised look so like clean operation wounds that inexperienced surgeons, and also experienced surgeons new to a theatre of war, are tempted to suture them; unfortunately, they sometimes succeed, and persist in spite of warning, till the loss of a limb or a life teaches them their lesson. Except in the case of purely surface injuries, war wounds can never be rendered entirely healthy and entirely sterile by surgical toilet. The limits of tissue damage cannot be decided with any accuracy, and bacteria, blasted in by the cushion of air that precedes the projectile or displaced along tissue planes by movements of the limb, may lie well outside the visible confines of the wound track. Where the bacteria are few and the remaining damaged tissues small in amount, the defences of the body will soon turn out the invaders unless they are hindered by tension. In a sutured wound the hyperaemia which should give protection is limited by the unyielding surroundings and finally replaced by ischaemia, and the outpouring of defensive fluids is brought to a standstill when the interstices of the wound are filled; the bacteria, on the other hand, find in the trapped discharges an ideal pabulum and in the anoxic tissues an easy prey.

The wounds of road and industrial accidents are, like those of war, lacerated and contaminated, though they never show the extreme devitalization that is a fundamental factor in the pathology of wounds caused by modern weapons, nor are they often contaminated to the same extent. Nevertheless the same problems are present in each, and methods which have been found to confer safety and give good results in war wounds should be safer and better in the traumatic surgery of peacetime. The wisdom of unrestricted drainage during the first few days after an open laceration, when an unprepared body is summoning its defences against an unexpected invasion by pathogenic bacteria, the value of closure by suture or skin graft as soon as the defences are established and before the changes of repair have come to leave their train of deformity, pain, scar tissue, and limited movement—these are principles that we cannot well afford to ignore.

The methods in use to-day are simple, as all methods in the field must be, and the tests applied are clinical ones. At the primary operation the wound is carefully excised. Foreign bodies and dirt are removed and all damaged tissues are cut away. The skin is freely incised to allow access to every pocket, but only the barest edges are trimmed off. A simple dressing, usually vaselined gauze, is applied to the surfaces of the open wound, and the limb is immobilized in plaster.

As soon as the patient reaches hospital the possibilities of suture are assessed by the study of his general condition and of the notes of the first operation. He is rested for one day, during which any deficiency in his blood count is made up by transfusion. The wound is not inspected. The dressing is removed in the operating theatre under full aseptic ritual as the first step in the operation of closure, which is usually on the fourth to sixth day. Experience has shown that if the wound appears clinically healthy at this stage it can be sutured safely, even though it may prove on culture to harbour pathogenic bacteria. The wound surfaces are disturbed as little as possible, though some tags or pieces of exposed tendon left at the primary excision may be trimmed away before closure. The skin is brought into apposition by interrupted sutures of some unabsorbable material, which may also take up deeper layers, but no buried sutures are used. The limb is again immobilized in a plaster case, and the stitches are removed on the tenth to twelfth day.

Skin Cover

It has been found that at this interval after the primary operation a certain amount of tension may be used to approximate the skin without danger. A covering of normal skin with subcutaneous fat gives a result so much better than the best graft that every effort is made to approximate the edges, and this is generally possible over the greater part of the wound. Where the skin edges cannot be made to meet, many surgeons prefer to mobilize them as swinging flaps to cover the wound of the deeper parts, and to cover the gap thus produced, whose base is undamaged muscle, with a graft. Normal skin over scarred muscles or an epithelial graft over normal muscle is functionally more satisfactory than a skin graft over an underlying scar.

The need to provide skin cover at the earliest possible date is now an article of surgical faith that will remain. Not till a wound is epithelized does the formation of granulation tissue stop and the scar left by previous granulations become absorbed or moulded along lines of stress in response to the call of function; not till then does the fight against infection cease to be a constant struggle to keep away or kill pathogenic bacteria. The technique of skin grafting has been perfected to a remarkable extent and, for the simpler procedures, brought within the scope of the non-expert. For covering unhealthy granulations to provide temporary epithelial cover, split-skin grafts cut into small pieces—so-called "postage stamp" grafts—have proved more satisfactory to the recipient and donor areas than pinch grafts. For large areas the Padgett dermatome has made it possible to cut split-skin grafts of any chosen thickness up to an area of 40 sq. in., for smaller areas to cut them to any desired shape, and to take skin from places, such as the abdominal wall, that could not formerly be used. The method of glueing grafts to their bed by a living adhesive made from mixed plasma and leucocyte extract, as described by Sano of Philadelphia, has proved an outstanding advance, permitting the provision of skin cover to surfaces that cannot be immobilized and to deep and irregular holes.

I would suggest that the principle of two-stage closure may prove applicable to the treatment of infections other than those caused by wounds or accidents. For more than 20 years drainage in abdominal emergencies has been unfashionable. It has had a poor press. Phrases such as "The peritoneum can look after itself" and "A tube in the belly drains only its own track" are freely used by young surgeons who never drain if they can help it, and the dangers of adhesions, of faecal fistulae, of erosion of vessels are quoted in further support. I would challenge most of these statements. A healthy peritoneum can deal with a considerable amount of infection recently introduced, but the peritoneum in the neighbourhood of a chronic abscess has lost much of its phagocytic power. A tube introduced into the normal peritoneum of an experimental animal may seal itself off, but one put into the infected belly of a man goes on draining while there is anything to come out and allows egress to infected fluid in the whole region from which it emerges. Faecal fistulae or haemorrhages may have been caused in the past by rigid tubes of glass or hard rubber left for long periods, but they do not follow the use of soft tubing or corrugated rubber. As to adhesions: which will cause the more—a tube-track or a collection of fibrin or pus slowly absorbed? In three years of service in Africa I observed many hundreds of patients with abdominal wounds, operated on by surgeons of varying outlook under many different conditions. I found that those who drained most got the best results. Not to drain, when in doubt, is needless bravado at the patient's expense.

But if the peritoneum can look after itself in the presence of a recent infection the tissues of the abdominal wall are less able to do so. It is a common experience after an operation for appendicitis or duodenal perforation to find that the peritoneal cavity recovers but the abdominal incision becomes infected and breaks down. The lesson of the surgery of soft-tissue wounds in war may well be applied to those cases in which the layers of the abdominal wall have been bathed in infected fluid during an emergency operation. After the intra-abdominal mischief has been dealt with the peritoneum alone is sutured, and the remaining layers dressed with gauze soaked in flavine or one of the newer acridine antiseptics, but left entirely open, or at most protected from evisceration by few stout sutures through all layers. In four days' time preferably after the bowels have been opened, layer closure is done under local or pentothal anaesthesia.

General Health of the Injured

But the surgical care of a wounded man to-day implies besides the treatment of his wound, the restoration or maintenance of the general health, on which the health of the wound depends, and an attack on the bacteria that invade it. We seek to help his general powers of resistance by restoring lost blood early and in full amount and making good any later deficiency as it occurs, by keeping fluid reserves fully charged at a time when synthesis, elimination, and temperature regulation are calling for water, and by maintaining that positive nitrogen balance which is essential to the processes of immunity and repair. We can, for the first time in history, attack bacteria in the wound itself without harming healthy tissues. These things are now so much a matter of everyday routine that it is hard to realize that at the outbreak of war continuous intravenous therapy was by no means universally practised, transfusion was seldom given in greater quantities than two pints a day, stored blood was a curiosity and stored plasma unknown, and the use of sulphonamides was being tentatively explored. Penicillin and accurate methods for bedside estimation of haemoglobin and plasma protein have been available only within the last two years. These methods will remain an essential part of the care not alone of our injured but of our sick in civil life.

Blood and Protein

That tissues require a supply of blood fully charged with cells and proteins to carry out their processes of repair, that the most effective antiseptic against anaerobic invaders is oxygen and the most effective applicator of oxygen is the erythrocyte—these are truisms when set down on paper; yet their truth has been realized only slowly, as the result of the clinical observations that men with a haemoglobin of less than 70% show little evidence of repair in their wounds but start to do so after a transfusion of two pints, that men whose blood loss has been fully restored within a few hours of wounding seldom get gas gangrene. Anaemia must be constantly watched for and suspected in any patient whose progress is unsatisfactory; for it tends to appear insidiously, quite apart from any recognizable blood loss, in the wounded, the burnt, the sick, the victims of any infection, not alone those by organisms known to be haemolytic, and to reappear after correction.

The greatest surgical advance of this war, more important even than penicillin, is the development of the transfusion service. This advance we owe entirely to two British officers—Brig. Sir Lionel Whitby, who designed the instrument, and Lieut.-Col. G. A. Buttle, who taught us how to use it. It was in the Middle East, during the thrust of the Eighth Army across Africa from Alamein to Tunis, that the provision of whole blood to the forward operating units was first organized on a satisfactory scale, and that the life-saving importance of early, rapid, and adequate restoration of blood volume in haemorrhage and shock was first learnt. To-day we know no limits, in amount or rate of administration, other than the needs of the patient. I need hardly remind you that plasma loss is the chief feature in burns shock, and that fat embolism and the absorption of products of muscle breakdown are occasional factors in the shock syndrome of injury. But for practical purposes—and the stretcher-side outlook of the field surgical unit and the accident reception ward must be practical—shock is due to loss of circulating volume, and wound shock is due to loss of blood. The treatment of wound shock is the replacement of lost blood by blood: early, before irreparable damage is done; rapidly—that is, at the rate of a pint in 10 to 15 minutes—till the systolic blood pressure has reached 100 mm.; and adequately, till the restoration is within 90% of normal. A wounded man insufficiently resuscitated, or one resuscitated with plasma alone, may have a reasonable pulse and blood pressure, but he is not fitted to stand operation or anaesthetic, to be sent on a journey, or to repel the invasion of bacteria. Fit men recently wounded can take any amount of O (IV) blood from a reliable blood bank

reactions are seen only where the source of blood is unreliable, or in men who have, after repeated transfusions, developed antibodies against almost any blood but their own.

A transfusion service, with blood banks sufficient to meet any needs, must be available for the resuscitation of the injured and the restoration of the sick in civil life. It will hardly be possible to retain in its entirety that spirit of willing service for others that has bound us together during the war, and many who now attend four or five times a year to give their blood for the wounded will not volunteer with the same readiness in peacetime. Nevertheless if the importance of the service in any scheme of national health is broadcast in the right way, and if the collecting centres are managed with due regard to the time and comfort of those who attend, we need have no fear that the supply of donors will be insufficient for any genuine need. We, on our part, should see to it that transfusion is used freely when needed, but that it is never allowed to become a stunt or an automatic gesture. Since my return to England I have been distressed to see how many surgeons start a blood drip going at the beginning of such straightforward operations as gastrectomy or resection of the rectum. If the value of blood is in replacing lost blood, it should not be wanted during an operation unless severe haemorrhage is expected during its course, as when the patient has a bleeding ulcer or a vascular tumour. The surgeon who expects to lose two pints of blood during a gastrectomy (and a smaller loss does not demand immediate transfusion) should confine himself to circumcision. If the patient is anaemic on admission to hospital the blood deficiency should be fully made up before the operation starts; if during its course he loses more than usual, replacement should, in most cases, be deferred till his reaction to the anaesthetic and operative handling is over and his circulatory requirements can be assessed, calmly and accurately, in the ward.

The need to maintain a positive nitrogen balance during sickness has long been known, but it was not till the publication by van Slyke of a simple copper sulphate method for bedside estimation of plasma proteins that the importance of the study of protein metabolism in clinical medicine received full recognition. The circulating proteins include the antibodies, and they furnish the building material needed for tissue replacement. They are constantly being used, and constantly renewed from proteins in the food. Normal wastage is added to by actual loss in wounds and burns, and when in addition the intake is low, as it is in starvation or during a diet low in proteins as the average invalid diet is wont to be, the protein content of the plasma may sink from its normal 6.7% to not more than half that figure. At this level the whole metabolic machinery is out of gear.

Proteins may be replaced in many ways, of which the simplest is a diet rich in eggs, cheese, and other easily absorbed proteins. In the ill, transfusions of plasma furnish an easy means of replacement. When the need is extreme the intravenous administration of amino-acids can maintain a positive nitrogen balance even in the presence of excessive loss or destruction. By such means some of the victims of the Coconut Grove fire at Boston, who had suffered burns involving more than 50% of their body surface, were kept alive till their skin loss could be made good. More recently the value of intravenous amino-acids in combating liver damage has been shown. At the present time pyrogen-free preparations suitable for intravenous use are scarce and are therefore kept for research purposes, but they will soon be obtainable by all who need them.

Chemotherapy

The value of war as a large-scale experiment in which new methods can be tried and improved is seen particularly in the field of chemotherapy. From a tentative beginning, when we had only sulphanilamide and sulphapyridine and knew little of either, we have progressed by the observation of hundreds of thousands of experiments to a reasoned estimate of the value of both the sulphonamide group and their newer and better-publicized rival, penicillin. No more than a few general observations are possible on this occasion.

Both the sulphonamides and penicillin are bacteriostatic rather than bactericidal. When distributed by the blood stream they reach only those parts which have a blood supply; when applied locally they are effective only in areas they can reach. Neither can therefore be expected to eradicate bacteria lying out of reach of the blood stream and of local attack, as they are in abscess cavities, round foreign bodies, and in the depths of a wound containing dead tissues. Meleney's very careful investigation of 1,700 accidental injuries treated in American hospitals has shown that the sulphonamides, however given, are unable to prevent local infection in a contaminated wound, but that when given by mouth they appear to reduce the incidence of systemic infection. The same may be found to be true to a lesser degree of penicillin. Applied locally, it appears to exert a definite bacteriostatic effect when injected into simple spaces like the meninges, the joints, and the pleura, but its power to sterilize lacerated wounds is by no means proved. In general it may be stated, as Burns has recently pointed out with regard to penicillin, that chemotherapy keeps a local infection local, and will therefore reduce the danger of spreading infection in war wounds and of a systemic flare-up after an operation on infected areas.

Both groups at present have their own sphere. The sulphonamides are cheap, stable, and compact. They can be kept indefinitely and used in any climate, and simple clinical controls alone are needed during treatment. Their disadvantages are the malaise and nausea to which they occasionally give rise, and the dangers of agranulocytosis and renal suppression, which, however, should not occur when the danger is known and guarded against.

Penicillin is a more efficient bacteriostatic than any of the sulphonamides over a wider range. Staphylococci and spirochaetes, against which sulphonamides are ineffective, are particularly sensitive to its action. It appears to bring no dangers, and to be entirely innocuous to human tissues, even in concentrations much higher than any used in clinical work. The disadvantages of penicillin are its instability and the elaborate control that is necessary in its use.

At the present moment the sulphonamides are preferred for infections by the *B. coli* group, which are sulphonamide-sensitive but penicillin-resistant; they will therefore usually be chosen for the post-operative treatment of peritonitis and for the pre-operative prophylaxis in such procedures as closure of a colostomy and resection of the colon or rectum. They are the drugs for treatment in the home and in the wilds, and for lesser infections when it is not considered necessary to mobilize the heavy artillery of the bacteriological laboratory. As soon as penicillin can be produced cheaply and in a stable form that can be given by mouth, the sphere of sulphonamides will almost disappear, unless fresh compounds are found which will cover blind spots in the penicillin range.

Penicillin has already written a new chapter in certain infections. In gonorrhoea it has been able, in a 24-hour course, to give a higher percentage of cures than any method of treatment previously known. In syphilis it appears to do the same, but a much longer period must elapse before it can be said that the disease has been cured and not merely suppressed. In the acute osteomyelitis of children it is able, when given early, to eradicate the infection and allow the involved bone to reconstitute its normal architecture. In the surgery of damaged and infected bone it has given what is perhaps the most striking proof of its value. Gunshot fractures have, under the protection conferred by penicillin, been closed by delayed primary suture with a high proportion of success. Gaps following compound fractures have been grafted as soon as, or even before, the wound was healed. Compound fractures have been fixed by plates, and reamputations have been performed while the provisional stump was still discharging. These procedures had been attempted before, but the attempt had usually led to failure or even disaster. That they now succeed is an index of the debt we owe to penicillin.

Old Methods on Trial

If war is a trial ground for new methods it is also able to throw a new light on many old ones. In the last five years the problem of the infected hand has once more come to the fore. A soldier with a wrecked hand can no longer serve as a soldier, and the months of physical and vocational training that have gone to make him one are wasted. When the hand has been wrecked through faulty incisions for the

drainage of sepsis the tragedy is one that emphasizes the supreme importance of this branch of surgery in the training of students.

I feel most strongly that the inculcation of correct methods for dealing with infections of the hand is one of the chief tasks of teachers on the surgical side of any hospital. The curriculum is already overloaded. Important subjects such as psychology and radiology are skimped, and new subjects are constantly clamouring for admission. To make room for these I, for one, would gladly remove the whole teaching of operative surgery, including attendance at operations, from the pre-graduate course. The student cannot learn enough in such attendances to be of any value to him; on the other hand, he is present as an unskilled assistant or an unsterile spectator at a performance which should be relegated to a team of skilled experts. He gets a superficial acquaintance with a few operations and does not learn enough to do them himself, but, thinking he has, he may be tempted to try them before he is properly trained.

The ritual of the theatre, and the gradual apprenticeship of undertaking operations of increasing difficulty, should be left to the postgraduate training of those who intend to pass to higher qualifications and to adopt surgery as a career. The student, thus freed, should spend the time at his books or by the bedside, or should watch occasional standard operations from the safe seclusion of an observation floor. But the operative treatment of the infected hand is an exception. The correct operations should be taught to every future doctor; they should be practised on the cadaver and demonstrated in the casualty department. Only so can the hand wrecked by incompetent treatment, by drainage left too late or done through midline incisions for pulp or tendon infections, or by dorsal incisions for infections of the tissue spaces, be avoided. Here I would plead for the final abolition of two methods of drainage still advocated in some books but proved by the extensive experience of war to be disabling. I refer, first, to the horseshoe incision round the pulp of the finger, which after healing leaves a hideous and disabling "frog-mouth" deformity: two lateral incisions meeting across the front of the bone and separated by an intact bridge of skin at the tip give just as effective drainage and leave no disability. Secondly, I refer to incisions into the tendon sheath of the fingers, which, though placed in the correct lateral plane, transgress the joint level: incisions may be made into the sheath for the whole length of each phalanx, but the thin portion which holds the tendon in place at the joint should be left.

Varicose veins provide another common and disturbing problem in the Army. I have come to feel—and most other consultants who see these cases in large numbers agree with me—that the injection treatment has no place in the Services; indeed, I would go further and say the time has come to consider seriously whether the injection treatment of veins has any place in legitimate therapy. For those who would dally on the slippery slopes of cosmetic surgery it has its attractions, for it is a cosmetic procedure and no more. The injection of a prominent vein will cause that vein to disappear, but it does nothing to relieve the back-pressure that made it appear in the first place. The same back-pressure will soon dilate another collateral vein, which will in turn be attacked by the injecter, till finally all veins in the leg, including many of the deep ones, are destroyed and the patient is left with a heavy, aching, and oedematous limb. To-day many of the victims of the injection craze of the 'twenties are coming to the out-patient departments of hospitals seeking in vain for relief.

The only successful treatment for true varicose veins which are causing symptoms is Trendelenburg's operation, properly done. Unfortunately the very simplicity of the operation tempts the cosmetically minded to perform inadequate ligatures through small incisions, and the hangover from injection days tempts him to obliterate the veins in the calf by sclerosing fluids. Unless every collateral in the upper two inches of the saphenous vein is tied—and these may be up to 20—and unless the vein is tied flush with the femoral, recurrence is only too likely. Injection of the calf varices, particularly retrograde injection down the saphenous channel, is a frequent cause of failure, for either the sclerosing fluid is diluted in the varices to a concentration at which it is ineffective or it spreads through the communicating veins and damages those under the deep fascia. Surgical extirpation is tedious, but it is the safest and most satisfactory way of destroying these evil varicosities without harming the deeper channels.

Surgeons and Surgical Organization

What of the war surgeon himself—the man we shall know by the British warm, dyed blue, in which he drives around, and by the battle dress he dons for fishing and digging in the garden? What has he learned from his years in the Army, the Navy, the Air Force?

The war has taken men to so many parts of the world, from the frozen mud of Iceland to the scorching sands of Somaliland, and thrown them into campaigns of so many kinds—the shattering horror of Crete or the soul-destroying idleness of the Sudan hinterland—that generalization is impossible. The surgeon who is reasonably fortunate will have served a spell in the forward areas, with a field surgical unit or a casualty clearing station, and he will also have worked at a general hospital at the base or on the lines of communication.

In the forward areas he learns the importance of decision, the need to decide not merely the right procedure but the right time to do it, the realization that there is only one best time for any operation and that, once past, it will never come again. He learns that while a decision may be the right one on the facts as they present themselves when it is made, in the seriously ill or wounded facts are never static but are changing in either direction, so that a course of action that is right at one moment may have to be reversed an hour later. He acquires manual skill, anatomical knowledge far transcending the surgical approaches of textbooks, speed without haste, courage, and physical endurance. He learns to look on the operation as part of a plan of restoration of which it is by no means the most important one, to make allowances for the difficulties of those who have gone before him, and to plan his steps to make the work of those who will follow him easier and more satisfactory. He learns, in the comradeship of the battlefield, to love and respect the patient, Thomas Atkins, who has given all and suffered all, and to resolve all doubts and difficulties by reference to one standard alone—"What is best for this particular man?" He learns, by long periods of work to this high standard, self-respect and self-confidence, without which no surgeon can carry on through the dark days when everything seems to go wrong.

At the base he learns to work as part of a team in his own hospital, as part of a system in the Service of which his hospital forms a part. He finds that he is encouraged to work individually and to put forward his own ideas, but he soon realizes the justice of the control which forbids him to use methods that have been fried and proved dangerous, which discourages him from asking for drugs or instruments as his fancy dictates when the supplies of an army in the field can be made efficient only by some degree of standardization, which gives him every opportunity to study the work of specialist teams so that he shall be able to undertake surgery of every kind should he be put in charge of a unit isolated by time and distance from any help, but debars him from doing intricate operations when others with greater skill and experience and better equipment and assistance are available.

Much that is good in this training and this organization can be applied with advantage to the problems of peace. The chief difference between civil surgery and Service surgery is that the former is based on a loose association of individuals all of whom are free and, in theory at any rate, equal, while surgery in the Services is organized on the principle of the pyramid of responsibilities—a number of experienced surgeons being each responsible for observing, guiding, and encouraging a group of surgeons at a junior level, for co-ordinating their work, and for bringing the lessons they have learned to the notice of those at a higher level. The civil system has the great merit of allowing men of energy and ability to reach the top even though they enter surgery from unorthodox and perhaps despised channels, but it does little to curb or eliminate the incompetent. In the struggle for existence in Nature failure pay for their inefficiency by extinction, but in the free-for-all fight of civil surgery the incompetent and second-rate are

unhonoured but are not debarred from practice, in which, if they have a good sales personality, they may be financially successful.

With the advance of technical surgery to the undertaking of feats of greater and greater difficulty, needing not merely the highest technical skill and anatomical knowledge but the design of a plan embracing the whole pre- and post-operative period to eliminate risks that have brought disaster in the past, the difference between the results of the expert and the would-be expert is increasingly apparent. To-day there is nothing to prevent any surgeon on the staff of a hospital—indeed, any man who has secured a legal qualification to practise—from attempting to pin the neck of a femur, resect a carcinoma of the oesophagus, remove a tumour of the brain, or tie a patent ductus arteriosus, without any more valid qualification for the task than boundless self-confidence and a cursory perusal of an article in one of the journals. The system has in the past produced some brilliant surgical freelances; it has also filled innumerable graveyards.

It seems inevitable, in a world where the rights of the individual will be acclaimed in a universal charter, that the individual who is sick must be assured of a service that is, at any rate, above a datum line of adequate competency. It would be folly in the extreme to attempt to limit surgical enterprise by setting certain standards of orthodoxy which must be followed by all. But it would be less than justice to the patients for whom we stand responsible to allow free rein to the enterprise of the type of surgeon known as courageous—courage in this context meaning willingness to face any risk so long as it is borne by the patient. We must insist that no man shall undertake any of the more hazardous operations till he has been trained for it by apprenticeship in simple tasks, till he has studied its steps in the clinics of acknowledged masters, and till he has practised it under supervision.

The pyramid of responsibility must be the key to our surgical organizations—not the hard and static Pyramid that stands on the Nile as a monument to past oppression, but the human pyramid that forms the finale at the circus, where the man at the top, who is usually the father, is hoisted up and supported by a willing phalanx below, where he feels the stresses of each member transmitted to him and encourages or chides as the performance of the night demands, but where, at the end, he brings all forward to take the bow.

AN OUTBREAK OF HEPATITIS IN A DIABETIC CLINIC

BY

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From Jan., 1943, until Jan., 1945, 63 diabetic patients attending the clinic at the Royal Hospital, Sheffield, have been diagnosed as suffering from hepatitis. The clinic supervises approximately 450 patients of all ages; elderly females preponderate.

Prodromal Symptoms

Anorexia, loss of weight, and vomiting were often encountered. Vague abdominal pains set a diagnostic problem until the full clinical picture developed. Tingling of fingers and neck rigidity may have been early neurological manifestations (Lescher, 1944). Enlargement of the liver, with tenderness, was noted in 30 patients. The organ was firm, the edge blunted and tender. Splenic enlargement was evident in three patients. In one the spleen was felt 2 in. below the costal margin; in the other two the tip could be felt. Two patients showed macular skin rashes 24 hours before the jaundice appeared and 11 had stiffness of joints.

TABLE I.—*Duration of Prodromal Symptoms before Appearance of Jaundice*

No figures available	8 patients
1–3 days	4 ,,
4–6 ,,	7 ,,
7–9 ,,	18 ,,
10–12 ,,	9 ,,
13–15 ,,	8 ,,
16 days and over	9 ,,

TABLE II.—*Clinical Features in 63 Patients*

Enlargement of liver	30
Enlargement of spleen	3
Anorexia	53
Loss of weight	47
Vomiting	38
General malaise	14
Stiffness of joints	11
Fever	6
Diarrhoea	6
Pruritus	3
Macular rash	2
Tingling in fingers and neck rigidity	2
No symptoms	2

Course and Complications

Immediate complications occurred in a number of cases owing to the sudden disturbance of carbohydrate metabolism. The disturbance was akin to that seen in diabetics suffering from any infectious disease. The lowering of carbohydrate tolerance and ketosis occurred mainly in younger people, and were temporary. Insulin had to be increased and the diets altered to suit patients who had no desire for food.

Another complication was acute atrophy of the liver. Two patients died from this. One patient showed acute shrinkage of the liver one day after the jaundice became manifest. She recovered, but the severity of the diabetic state has permanently increased, and instead of 60 units of insulin she now requires 120 units. Apart from this she has kept well for the last 18 months.

Delayed complications occurred in 8 cases. They were associated with the persistence of the jaundice for some time and the transition from acute to chronic hepatitis. Two patients died. The 6 who are alive are in various stages of ill-health.

TABLE III.—*Deaths and Cases of Chronic Hepatitis*

Case	Age	Duration of Jaundice	State of Health
1	27	7 days	Died. Acute yellow atrophy (confirmed at P.M.)
2	56	16 ,,	Died. Subacute atrophy (confirmed at P.M.)
3	73	240 ,,	Died 300 days after onset of jaundice. Cirrhosis of liver. No P.M.
4	64	90 ,,	Died 110 days after onset. Cirrhosis of liver (confirmed at P.M.)
5	62	180 ,,	Severe ascites; 190 pints removed so far
6	67	90 ,,	Liver no longer palpable. Anorexia. No free fluid
7	65	300 ,,	Liver 1 in. below costal margin. Anorexia
8	65	105 ,,	Liver no longer palpable. Liver function tests remain abnormal. Feels quite well
9	67	120 ,,	Liver 2 in. below costal margin. Anorexia
10	58	110 ,,	Anorexia; backache. Liver small and nodular (confirmed at laparotomy). Ascites and oedema of legs absorbed

Patients suffering from chronic hepatitis showed little disturbance of carbohydrate metabolism. They all required small doses of insulin before the onset of hepatitis, and continued with them afterwards. There was neither ketosis nor excessive glycosuria.

There appears to be a relation between duration of jaundice and failing liver function. There is also a direct relation between the age groups and the duration of jaundice.

TABLE IV.—*Age and Duration of Jaundice*

Age	Duration in Days									
	10	20	30	40	50	60	70	80	90	100+
–9	1									
10–19		1	1							
20–29	1		1	1	1	1				
30–39		1	2	2						
40–49			4		1	2				
50–59		4	3	3	2		1	1		
60–69		1	2	3	5	2	1	1	2	6
70+			2	2			1			1

In 49 cases jaundice cleared in under 2 months, with an average duration of 33 days. Six patients in whom the jaundice lasted for 3 to 8 months have apparently recovered completely, 6 are still ill, and 2 died after 300 and 110 days' illness respectively.

It is noteworthy that all the chronic hepatitis cases and all but one of the deaths occurred in persons over 55 years of age. The age and sex incidence of cases (Table V) shows a preponderance of older patients, and it is possible that age as well as diabetes played a part in producing the high incidence of fatalities and chronic hepatitis.

TABLE V.—*Age and Sex Incidence*

Age in Years:	0–	10–	20–	30–	40–	50–	60–	70–	80+	All Ages
Male ..	1	—	4	3	2	—	6	1	—	17
Female	1	2	3	3	4	13	16	3	1	46
Total ..	2	2	7	6	6	13	22	4	1	63

Method and Spread of Infection

The cases of hepatitis might have been due to infective hepatitis spreading by contact among patients attending the clinic or to homologous serum hepatitis (Ministry of Health Memo, 1943) spread by syringes used for collecting blood. Certain data are presented and analysed in order to investigate these possibilities.

Organization of the Clinic.—It has been the practice of this clinic to let the patients attend periodically. They arrive in the fasting state in a large out-patient hall, and sit on benches, which are usually overcrowded on clinic mornings (60 to 70 patients may attend). They queue slowly to have their weights recorded and then have venous blood drawn for blood-sugar estimations. The sister in charge of the collection of blood draws it, using a fresh needle on each patient. The needles are boiled for 20 minutes. The syringes are never boiled, but are kept in spirit and rinsed in sterile water before use. The patient returns to the out-patient hall, perhaps getting some tea from the buffet, has his breakfast, and awaits the medical interview. Thus there were opportunities in the clinic for spread either by contact or by syringes.

Monthly Incidence of Cases.—Table VI shows the number of cases occurring in each month from Feb., 1943, to Dec., 1944. The incidence increased in June, July, and Aug., 1943, decreased during the next three months, and rose to a sharp peak in Dec., 1943.

TABLE VI.—*Monthly Incidence of Cases*

	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Total
1943 ..	—	2	1	1	3	5	6	6	4	4	3	11	46
1944 ..	2	—	1	1	2	2	1	3	3	—	—	2	17

Owing to the irregularity of attendance, and consequently of contacts between cases, no conclusions as to the method of spread of infection can be drawn from the monthly incidence.

Contact Between Successive Cases.—The possibilities of contact between cases were studied on a chart of attendances at the clinic. It was assumed that cases were infectious during a fortnight before and a fortnight after the onset of illness. In 7 cases the incubation period might have been 20 to 40 days, and in 23 others it might have been 41 to 120 days. In 4 cases the incubation period might have been either 20 to 40 or 41 to 120 days. Thus 11 cases could be accounted for on the basis of the 20–40-day period found in infective hepatitis, and 23 cases on the 41–120-day period found in homologous serum hepatitis. The latter number might have been increased by assuming a longer period of infectivity in the infecting case. Thus, in just over a third of the cases there was a possibility that the incubation period was that which usually follows parenteral administration of icterogenic serum (Havens, Paul, and van Rooyen, 1945). On the other hand, there were 7 cases in which the incubation period might have been 20 to 40 days, and it is impossible to dismiss completely the idea that some of the cases may have been due to contact-spread of infective hepatitis.

Similar conclusions are suggested by two instances of apparent spread to contacts who did not attend the diabetic clinic.

1. Girl aged 17, admitted in pre-coma. Jaundice appeared next day. A nurse in charge of this patient came down with a sharp attack of hepatitis 30 days later; it lasted three weeks. The nurse had a bad relapse lasting several months.

2. Man aged 26, admitted with hepatitis and ketosis. His wife developed jaundice 51 days later.

The incubation period in the first case suggests that the disease was infective hepatitis, while the second is perhaps another instance of the long incubation period occasionally observed in the contacts of cases of homologous serum hepatitis (Propert, 1938; Beeson, Chesney, and McFarlan, 1944; Neefe *et al.*, 1944).

Two patients were possibly infected at home.

1. Mrs. A., aged 66; lives with her married daughter. Her son-in-law had jaundice in mid-June, her daughter in early August, she herself 27 days later.

2. Mrs. B., aged 63; nursed her daughter, who had jaundice. She developed it 56 days later.

Mrs. A.'s was almost certainly a case of infective hepatitis, while Mrs. B. might have been infected by a missed case at home or by contact or syringes in the clinic.

The epidemiological picture of this outbreak was complex, and it appears that both contact and syringe transmission occurred. There were no instances of second attacks to suggest the activity in this epidemic of two immunologically distinct icterogenic agents, and the data available suggest an identity rather than a difference between the agents of infective hepatitis and homologous serum hepatitis. This may, however, apply only to the present epidemic, because other workers have recorded data suggesting differences between the agents (Witts, 1944; Beeson, Chesney, and McFarlan, 1944).

Discussion

Graham (1938) published the first account of an epidemic of jaundice in a diabetic clinic. He saw 28 cases in two and a half years. Overcrowding, considered one of the important contributing factors, was abolished and the epidemic quickly subsided. Cameron (1943) and MacCallum and Bradley (1944) showed that the virus of infective hepatitis could be transmitted by intravenous injection of icterogenic serum taken from a case during the pre-icteric stage and the early days of the jaundice. The present epidemic occurred at the time of a high incidence of the disease among the general population. There was also some overcrowding, which was intensified by the queueing for weighing and bleeding. As the blood was collected in syringes which were not boiled, it is possible that small amounts of infective material might contaminate the needles (MacCallum and Bauer, 1944; Cameron, 1943; Salaman *et al.*, 1944). The sister in charge of bleeding also gave injections at the V.D. clinic. There was no transfer or exchange of syringes between the two clinics, which are in different parts of the hospital.

In view of the possibility that infected syringes were the cause of the epidemic, all routine blood-collecting was stopped after Sept. 1, 1944, and only special cases were bled. The number of blood samples was thereby reduced from 50–70 to 5–8. The technique of drawing blood has not been changed. Since then only one case has appeared after an interval of 93 days. With the abolition of routine blood-collecting, overcrowding also diminished and, one supposes, the coincident droplet infection with it. There was less waiting and queueing, and the patients did not stay quite as long, because they took their breakfast at home.

The unusually high death rate and incidence of chronic cases compared with other outbreaks compels one to consider whether dietary factors came into play (Cullinan, 1939; Snapper, 1941; György and Goldblatt, 1942; McLean, Ridout, and Best, 1937; Aylward and Holt, 1937).

Since the advent of the slow-acting insulins the diabetic diets have been steadily increased. The diets used at this clinic are not high-carbohydrate diets in the strict sense. According to severity, age, and occupation, 120 to 200 g. of carbohydrate is taken each day. The diabetics who contracted jaundice had made use of their special meat and fat rations. They received 70 to 100 g. of protein and 100 to 150 g. of fat. Family rations were encroached upon by all the patients questioned. There is, in fact, no evidence to show that in these diabetics liver damage could be caused by dietary restriction or excess alone. On the other hand, there seems to be no doubt that insufficient diets may protract and aggravate liver damage caused by hepatitis. In the elderly diabetics who developed chronic hepatitis food intake had been poor and nutrition had suffered accordingly.

Summary

An outbreak of hepatitis in a diabetic clinic extending over two years and involving 62 patients is described. There were 4 deaths, and 6 patients were left with evidence of residual liver damage.

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TRANSMISSION OF INFECTION DURING WITHDRAWAL OF BLOOD

BY

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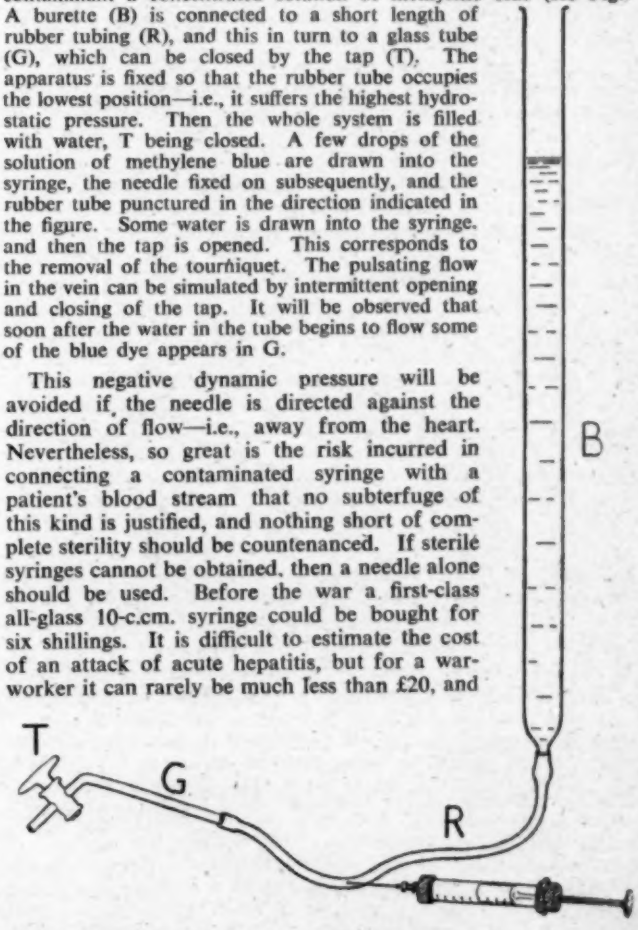
It is now generally realized that jaundice may be transmitted by syringes used for intravenous therapy if the syringes are merely rinsed with sterile water between cases and not sterilized by heat. Bigger (1943) showed that it is extremely difficult to sterilize a syringe by rinsing it even with antiseptics, and Salaman and co-workers (1944) reduced the incidence of jaundice in a V.D. clinic to vanishing-point by using properly sterilized apparatus for each individual patient. It is not so generally appreciated that there is almost equal risk of transmitting disease by syringes used for venepuncture. Sheehan (1944) attributed a long-drawn-out epidemic of jaundice in a sanatorium to transmission by the syringes used for taking blood for erythrocyte sedimentation rates, and in the present number of the *Journal* (p. 623) Droller records an outbreak of jaundice in a diabetic clinic which appears to have been in large part due to transmission by the syringes used for obtaining venous blood for estimation of blood sugar.

The orthodox method of taking a venous blood sample with a syringe consists in first placing a tourniquet on the upper arm to produce venous distension and then puncturing a vein at the bend of the elbow, inserting the needle in the direction of the heart. Blood enters the syringe under pressure from the vein, and a sample is taken by gently withdrawing the plunger. When the desired amount is collected the tourniquet is released and the needle withdrawn from the vein. Throughout the procedure direct contact with the vein is established by means of the sterile needle only, and since during the whole operation the pressure in the vein has been higher than that in the syringe it is assumed that no flow of blood can have taken place from the syringe into the vein.

In Droller's clinic the same syringe was used for all the patients bled on any one morning. It was washed out between cases and the needle was changed. It may appear strange that infection should have occurred through the syringe, though there is obviously a possibility that, unless great care is taken in changing needles, some of the contents of the wet syringe may be forced up the lumen of the needle and contaminate the point. But even if every precaution is taken in fitting the needle, some of the contents of the syringe not only can but *must* be discharged into the patient's vein during the venepuncture, and therefore material must inevitably be transmitted from one patient to another if the syringe is communal and unsterilized. This can very easily be proved by deduction or experiment.

The hydrostatic pressure of a fluid is equal to the actual pressure only if the fluid is at rest. Apart from its hydrostatic pressure, a fluid in motion exerts also a *dynamic* pressure, which depends on the speed and the direction of flow and which can have positive and negative values. In venepuncture the tourniquet must be released before the needle is withdrawn, to avoid the formation of a haematoma, and this is the determining factor in the transmission of infection. The operator ceases to exert traction on the piston of the syringe at this point, particularly if he is working single-handed. A flow of blood takes place in the vein when the tourniquet has been released, and this flow occurs in the direction in which the injection needle points—i.e., it causes a *negative* dynamic pressure in the opposite direction. As soon as this negative dynamic pressure attains a higher value than the static-pressure difference between vein and syringe, blood must flow from the syringe into the vein. In other words, the flow of blood in the vein sucks some of the contents of the syringe into the vein against the static-pressure head, very much as the contents of a throat spray are drawn up into a passing stream of air. It is clear that if the syringe was contaminated the contaminant will be drawn into the vein together with blood from the syringe.

The effect of the negative dynamic pressure can be demonstrated by substituting for the vein a tube filled with water, and for the contaminant a concentrated solution of methylene blue (see Fig.). A burette (B) is connected to a short length of rubber tubing (R), and this in turn to a glass tube (G), which can be closed by the tap (T). The apparatus is fixed so that the rubber tube occupies the lowest position—i.e., it suffers the highest hydrostatic pressure. Then the whole system is filled with water, T being closed. A few drops of the solution of methylene blue are drawn into the syringe, the needle fixed on subsequently, and the rubber tube punctured in the direction indicated in the figure. Some water is drawn into the syringe, and then the tap is opened. This corresponds to the removal of the tourniquet. The pulsating flow in the vein can be simulated by intermittent opening and closing of the tap. It will be observed that soon after the water in the tube begins to flow some of the blue dye appears in G.



This negative dynamic pressure will be avoided if the needle is directed against the direction of flow—i.e., away from the heart. Nevertheless, so great is the risk incurred in connecting a contaminated syringe with a patient's blood stream that no subterfuge of this kind is justified, and nothing short of complete sterility should be countenanced. If sterile syringes cannot be obtained, then a needle alone should be used. Before the war a first-class all-glass 10-c.cm. syringe could be bought for six shillings. It is difficult to estimate the cost of an attack of acute hepatitis, but for a war-worker it can rarely be much less than £20, and for a trained soldier it must be much more. It is therefore penny wise and pound foolish to economize in sterile syringes; but false economy of this kind is still much too prevalent in civil and military clinics and hospitals. The infecting dose of the virus of infective hepatitis is probably of the same order of size as some of the larger protein molecules, and a little contamination with this virus can go a very long way. A venepuncture, whether for taking blood or injecting drugs, is a minor operation, and there is no excuse for any lapse from the classical principles of sterility.

* With a grant from the Medical Research Council.

Summary

When blood is taken from a vein with a syringe by the orthodox technique some of the blood is sucked back into the vein when the tourniquet is released. If, therefore, the syringe is not sterile the patient is exposed to infection.

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IRON-DEFICIENCY ANAEMIA IN NORTH-WEST INDIAN SOLDIERS

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Little work has been done on iron-deficiency anaemia in India, and that entirely on the rice-eating labourer. Although anaemia is universal in this class (Macdonald, 1939; Napier and Das Gupta, 1942), it is scarcely improved by iron (Napier and Das Gupta, 1936; Bhave and Bopaiya, 1942). Even heavy hookworm infestation does not always increase anaemia in these people, although labourers with severe anaemia, whether macrocytic or microcytic, are more commonly heavily infested than their fellows (Napier and Billimoria, 1937; Napier and Das Gupta, 1937; Napier and Majumdar, 1938; Hare, 1940). The discovery, reported in this paper, of widespread mild iron-deficiency anaemia in North-West Indian soldiers is therefore of some interest.

Material and Methods

This work was carried out in the district of Peshawar (North-West Frontier Province) from Feb. to June, 1944. Some 1,400 men from six regiments were examined. All were natives of North-West India, and included Sikhs and Mohammedans from Patiala; Mohammedans, Jats, and Hindus from Rajputana; Mohammedans, Sikhs, Jats, and Gujars from the Punjab; and Pathans. The men were unselected, and all were regarded by their units as fit for active service. All had served more than one year, and two-thirds were in their second or third year of service.

Only the capillary blood haemoglobin of most of the men was estimated, but full haematocrit determinations were done on venous blood from 341 men. These latter were selected according to their (capillary blood) haemoglobin values, with weighting of the higher and lower haemoglobin classes; but they were in all other respects representative of the whole group.

Blood, whether from finger or vein, was drawn without stasis; Wintrobe's dry oxalate mixture was used for venous blood. Haemoglobin was estimated as acid haematin; the Zeiss haemometer, which has a glass wedge standard, was used, recalibrated to a maturation time of 20 minutes. (This instrument was calibrated against van Slyke blood-oxygen-capacity determinations in London in 1939. The only comparison available in India in 1943 was with various Adams and Hellige haemoglobinometers; there was good agreement.) Adams haemoglobin pipettes were used. For red cell counts, two Zeiss-Thoma chambers were charged from the same pipette, and about 500 cells counted on each; if the totals for the two chambers differed by more than 10% a new pipette was filled and the count was repeated. Adams and Zeiss red-cell-counting pipettes were used. The packed cell determinations were done in Wintrobe haematocrits; 45 minutes' spinning at about 3,000 revolutions a minute gave a constant reading.

Stools were examined for hookworm ova by the usual gravity flotation technique, in which about 1 g. of faeces is suspended in 10 ml. saturated saline. The number of ova per microscope field (1/3-in. objective, × 6 ocular) was counted, and the infestation roughly classified as very light (1 egg per 6 or more fields), light (1 egg per 2–5 fields), moderate (1–4 ova per field), or heavy (more than 5 ova per field).

Results

The capillary blood haemoglobin distribution is shown in Table I. No significant difference was found between units,

TABLE I.—*The Distribution of Hb Values (Capillary Blood) among North-West Indian Soldiers*

	Haemoglobin (g. per 100 ml.)											Total	Mean	σ
	6–	7–	8–	9–	10–	11–	12–	13–	14–	15–	16–			
No. of cases . .	1	2	5	13	43	131	256	417	361	113	14	1,356	13·42	1·371
Per cent. . .	0·5			1	3	9·5	19	31	27	8	1			

religions, or castes. Only one-third of the men had over 14 g. haemoglobin per 100 ml.; 14% had less than 12 g., and 5% less than 11 g.

The results of the blood counts and haematocrits on venous blood are summarized in Table II. All the anaemia was

TABLE II.—*Blood Counts of North-West Indian Soldiers (Venous Blood), Grouped according to the Hb Level*

Hb Class	No. of Cases	Hb (g.) Mean	R.B.C. (M./c.mm.)		Haematocrit		M.C.V. (c.μ)		M.C.H.C. (%)	
			Mean	σ	Mean	σ	Mean	σ	Mean	σ
7–	5	7·5	3·9		31		82		24·5	
8–	4	8·3	4·5		34		80		24·5	
9–	9	9·3	4·7		36		78		25·7	
10–	17	10·6	4·9	0·67	39	2·30	82	10·5	27·2	1·57
11–	31	11·4	5·0	0·73	41	2·07	82	9·75	28·2	1·37
12–	48	12·4	4·9	0·62	43	2·45	88	8·27	29·1	1·69
13–	77	13·5	4·9	0·38	45	2·20	91	6·53	30·2	1·49
14–	82	14·4	5·2	0·32	47	2·35	90	5·46	31·0	1·47
15–	51	15·4	5·4	0·31	49	2·01	91	5·51	31·3	1·35
16–	17	16·4	5·5	0·19	51	1·90	93	4·03	32·0	1·33

hypochromic, and usually normocytic. Of bloods with less than 11 g. haemoglobin about one-third were microcytic [mean corpuscular volume (M.C.V.) less than 75 c.μ]; of those with 11–11.9 g. about one-sixth were microcytic; and all but three of the remaining bloods were normocytic. No case of macrocytic or dimorphic anaemia was found. Table II shows how little the red cell count fell with decreasing haemoglobin until values under 10 g. were reached. The disproportion between the red cell count and the haemoglobin was sometimes extreme: 5 men with haemoglobins of between 9 and 11.9 g. had red cell counts of 6 millions per c.mm. or more; their M.C.V.s were 60–70 c.μ. (Such bizarre counts were of course repeated.)

The steady fall in the haemoglobin concentration or M.C.H.C. (=mean corpuscular Hb concentration) (see Whitby and Britton's *Disorders of the Blood*, Chapter III) as anaemia increased is evident in Table II. (The correlation coefficient between haemoglobin and M.C.H.C. is 0.73, about 14 times its standard error.) The differences between the mean M.C.H.C.s in different haemoglobin classes are statistically significant, except between the 14- and 15-g. classes. The mean M.C.H.C. of the 16-g. class is, however, significantly higher than that of the 15-g. class ($D/\sigma_D = 2.0$) and the 14-g. class ($D/\sigma_D = 2.9$).

These findings suggested a widespread iron deficiency, possibly extending even to some of those with 14 and 15 g. haemoglobin per 100 ml.

The mean values in the 14–16 g. haemoglobin classes are reasonably close to those obtained by Napier and Das Gupta (1936) for 30 young well-to-do Indian males in Calcutta. (Their means and standard deviations were:—Hb, g./100 ml.: 15.7, 0.91; R.B.C., M./c.mm.: 5.53, 0.49; M.C.V., c.μ: 90.5, 7.9; M.C.H.C., %: 31.1, 1.2.)

Response to Iron Therapy

The only unequivocal proof of iron deficiency is an increase in the haemoglobin following iron therapy. A group of these soldiers was therefore given 20 gr. of ferri sulphas exsiccatus daily—58 for 21 days, and 17 for 14 days. (The object was not completely to cure anaemic men, but to observe what proportion responded to a massive dose of iron.) The powder was suspended in distilled water (10 gr. to 1/2 oz.) immediately before use, and a member of the team gave each man a dose of the mixture morning and evening, and watched him swallow it.

Nearly all the men complained of diarrhoea (up to six motions daily) for the first two or three days of medication, but this symptom soon disappeared without any change of dosage. By the third week complaints of mild digestive upsets and constipation were faily common, but no man felt unwell enough to suggest discontinuing his medicine. The majority of the men felt better after the course, but, to some, stomach troubles outweighed any possible improvement in their general health.

The blood investigations were repeated the day after the iron course ended; the blood pictures before and after treatment are summarized in Tables III and IV. Most of the anaemic

TABLE III.—*Showing the Average Response of Different Hb Classes to 21 Days' Iron Therapy. (I = Before Treatment; II = After Treatment)*

Hb Class	No. of Cases	Hb (g.)		R.B.C. (M./c.mm.)		Haemato-crit		M.C.V. (c.μ)		M.C.H.C. (%)	
		I	II	I	II	I	II	I	II	I	II
<11	5	9·9	13·4	4·9	5·9	36	45	73	76	27·6	30·1
11–	4	11·6	13·4	5·1	5·1	41	44	81	88	28·2	30·4
12–	7	12·3	14·2	4·7	5·3	41	44	88	83	30·3	32·6
13–	19	13·5	14·2	5·0	5·0	43	44	88	89	30·8	32·1
14–	15	14·5	15·1	5·3	5·3	46	48	87	89	31·5	31·8
15–	6	15·3	15·8	5·4	5·7	48	49	87	87	32·3	32·3
16–	2	16·3	16·2	5·2	5·8	49	50	93	86	33·6	32·6

TABLE IV.—*Showing the Response of Different Hb Classes to 14 Days' Iron Therapy. (I = Before Treatment; II = After Treatment)*

Hb Class	No. of Cases	Hb (g.)		R.B.C. (M./c.mm.)		Haemato-crit		M.C.V. (c.μ)		M.C.H.C. (%)	
		I	II	I	II	I	II	I	II	I	II
<11	4	9·6	12·2	4·9	5·4	36	43	73	81	27·1	28·5
11–	3	11·3	13·4	5·2	4·7	41	44	80	92	27·4	30·3
12–	2	12·5	13·5	4·9	5·2	45	45	92	86	27·8	30·2
13–	1	13·8	14·0	5·1	5·8	46	48	90	83	30·0	29·2
14–	3	14·2	14·6	5·5	5·8	46	47	84	81	30·7	31·4
15–	2	15·5	15·9	5·3	5·7	49	49	93	86	32·0	33·0
16–	2	16·3	16·5	5·6	5·4	50	49	90	91	32·6	34·1

men had improved greatly: the best haemoglobin rise was from 9.6 to 15.5 g. after 21 days' treatment. An increase of over 0.5 g. haemoglobin per 100 ml. was outside the experimental error of the haemoglobinometer used, and was regarded as significant. By this criterion two-thirds of the 14-g. class and one-half of the 15-g. class responded to iron therapy (Table V).

TABLE V.—*The Number of Men in Each Hb Class treated with Iron, and the Number showing a Hb Increase of Over 0.5 g. per 100 ml.*

Haemoglobin Class (g. per 100 ml.)	<11	11–	12–	13–	14–	15–	16–
Number of cases ..	9	7	9	20	18	8	4
Number responding	9	6	8	8	10	4	0

If the proportion of responses in each haemoglobin class be fitted to the population distribution (Table I), we may conclude that about 60% of the population were iron-deficient.

Hookworm infestation had no unfavourable influence on the response to iron; indeed, three-quarters of the infested men responded, compared with one-half of the uninfested. The difference was not entirely due to the greater proportion of more anaemic men among the infested, but it was not statistically significant. Three anaemic men did not respond to iron. Of these, two were normal to clinical examination and had no hookworm infestation; the third had had recurrent diarrhoea and sore tongue for 18 months. (These men are included in Table III, and somewhat reduce the average improvement.)

Hookworm Infestation and Anaemia

The most common cause of iron deficiency in the Tropics is hookworm infestation. The infestation rates in different units in this series varied from 6 to 53%. Of the whole series, 12% had very light infestation, 8% light, 8% moderate, and 1% heavy. Table VI shows the haemoglobin distribution in men with the different degrees of infestation. The mean haemoglobin level of men with even very light infestation was significantly lower than that of those with none; and the mean fell still further as the weight of the infestation increased. Of the men with no infestation, one-half had over 14 g. haemoglobin per 100 ml., and only 13% had less than 12 g.; whereas of the men with moderate infestation, one-half had less than 12 g. haemoglobin, and only 15% had over 14 g.

TABLE VI.—*Showing the Relation between the Hb (Venous Blood) Distribution and Hookworm Infestation in North-West Indian Soldiers*

Hook-worm Load	Haemoglobin (g. per 100 ml.)										Total	Mean	σ	
	7–	8–	9–	10–	11–	12–	13–	14–	15–	16–				
None	2	2	3	3	22	29	64	67	42	16	250	13·83	1·632	a
Very light	1	—	—	5	5	12	12	5	7	2	49	13·13	1·793	b
Light ..	1	1	1	4	7	6	2	5	3	—	30	12·30	2·042	c
Moderate	1	2	3	6	1	7	2	4	—	—	26	11·54	2·029	d

D/σd:—ab 2·5; bc 1·8; cd 1·4; bd 3·4.

The above figures show that hookworm infestation was an important cause of this anaemia, but it was not the sole cause. Nearly one-third of the men with less than 11 g. haemoglobin per 100 ml. and over one-half of those with 11–12.9 g. had no demonstrable infestation.

The Iron Intake

The ration diet of these soldiers is nearly vegetarian, with a very small daily allowance of meat. The staples of the diet are ata and dal, and the important iron sources are:

Ata (coarse wheat flour)	50 mg. iron daily
Dal (pulses)	10 mg. " "
Greens (in season)	5 mg. " "
Meat	1 mg. " "

It will be seen that there is theoretically a liberal amount of iron in the diet, but only 1 mg. of this is derived from the meat.

Discussion

A survey of an adequate number of North-West Indian soldiers revealed widespread mild anaemia—two-thirds had less than 14 g. haemoglobin per 100 ml. This anaemia was all hypochromic, and either normocytic or, less commonly, microcytic. The response to iron therapy showed that nearly all the anaemia was due to iron deficiency, and suggested that over half the men with 14–15.9 g. haemoglobin were not saturated with iron. Cases of moderate and severe anaemia were usually (but not invariably) associated with hookworm infestation, and milder cases usually were not. Even the men with the lightest infestation had a mean haemoglobin level significantly lower than that of non-infested men.

There was no other source of blood loss, so that those cases of iron-deficiency anaemia not due to hookworm infestation must be ascribed to an inadequate iron intake. The daily iron intake was at least 60 mg., but all except 1 mg. of this was derived from vegetable sources. It would appear that the greater part of this dietary iron was not assimilated, for the response to iron therapy proved that the men were definitely iron-deficient in spite of the high iron content of the diet. (Little work has yet been done on the effect of phytic acid and mineral imbalance on the absorption of iron from cereal diets such as these men ate.)

These men, living on the threshold of dietary iron deficiency, are naturally very readily made anaemic by even the lightest hookworm infestations—infestations which would scarcely affect men with adequate iron reserves and intakes.

Summary

Widespread mild anaemia was found among North-West Indian soldiers.

The blood findings suggested that this was iron-deficiency anaemia, which was proved by showing that it responded to iron. By the same test, many men with normal haemoglobin levels were not saturated with iron.

Most of this mild anaemia was not associated with hookworm infestation.

Men with even very light hookworm infestation had a lower mean haemoglobin level than non-infested men, and most men with a moderate degree of infestation were anaemic.

In the absence of any cause of chronic blood loss in most of the men, it is concluded that the major cause of this anaemia is a deficient iron intake.

The daily food ration of the Indian soldier contains over 60 mg. iron, but of this all except 1 mg. is derived from vegetable sources. It is concluded that the greater part of this iron is not assimilated.

These men, who may develop iron-deficiency anaemia due simply to dietary deficiency, are unduly susceptible to hookworm anaemia.

Our thanks are due to the many officers, both medical and combatant, whose help made this work possible; and to the Director of Medical Services in India for permission to publish this paper.

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"ECZEMA AUTOLYTICA"

BY

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The term I use can be defined as a skin reaction culminating in an acute eruption of scattered vesicles breaking out rapidly on forearms, neck, face, and trunk from above downwards, in that order; following in point of time late after a persisting dermatitis or ulceration or patch of varicose eczema in the leg or ankle region, more often than elsewhere; standing as secondary in relation to one or the other, and as the outcome and sequel. Of a sudden, the primary eruption becomes tender, dry, red, and sharply inflamed, from neglect by the patient or from unsuccessful treatment, so exciting at a distance by way of the blood stream a secondary, autolytic eczema of constant character and uninfective kind, usually beginning on exposed parts, then spreading to covered parts.

The Lesion and Distribution

The vesicle characterizes this autolytic eruption, arising as an erythema about the papillary vessel-loop in the skin, speedily becoming a papule, then a vesicle. Some degree of oedema of the adjacent skin accompanies the vesiculation; there is no urticarial reaction.

At first the vesicles break out on the flexor forearms, sparingly on the sides of the neck and face, and on the trunk in its upper parts—not in patches, but, when fully developed, as a uniform eruption of discrete, scattered pink vesicles deep-seated in the skin, in area unmarginated, without figured pattern but with an uneven bilateral symmetry. Coincident with this outbreak, vesicles erupt about the primary patch; which patch, in its behaviour, offers the clue to the pathogenesis, and points the ready remedy for the secondary eczema. Owing to the limb being dependent, the vesicles in leg or ankle are of venous tint; in disease of the right side of the heart the whole secondary eruption is of a constant cyanotic hue, not pink.

The Cause

To what can this eruption be ascribed? The starting-point lies in a long-standing ulceration or circumscribed dermatitis of the leg or arm that has refused to heal in weeks or months, or after a year or two; the actual cause turns upon this delayed healing. The patient usually has for long laboured in vain with treatment by unsuitable applications, loose bandaging, and without necessary rest in bed. The original patch, vitiated by time and mixed infection, is usually found to have been treated by the mistimed use of a dry non-absorbent tissue dressing secured by one or two turns of a bandage; an aniline dye or silver nitrate paint; a too strong impermeable ointment; or a dusting powder. Any one or sequence of these, used prematurely in the course of the primary dermatitis, has the power to excite dermolysis by occlusion. A dermolysin is thereby formed locally: a foreign protein of bacterial origin or, more likely, a tissue-breakdown product—one or other, or both acting in concert—that sensitizes the patient to his own exudate and is the trigger that fires the systemic outbreak. This, in its changed form, is absorbed into the blood stream, circulating to the terminal capillaries of the skin, there to be slowed down and subjected to quick, sensitive variations in local temperature and exposed to other physical influences. Perhaps this is a sufficient explanation of the nature and distribution of the eruption. At all events, the lysin is of toxic origin, blood-borne; that much seems certain.

It is generally accepted that autolytic eczema has a constitutional cause to dispose to it, with a closer exciting cause in an auto-intoxication, rather than a micro-organismal toxaemia, arising locally in the patch. Clearly, the oedemato-vesicular eruption is a superficial non-microbic affection of the skin in areas guided and determined by the vessel route taken by the causal agent mentioned, always in the direction first of the uncovered parts. The constant aspect and locality of the autolytic eruption gives the denial to any suggestion of contagion carried by fingers or fomites; spread can happen only by absorption of autotoxin and to a chosen site in the circulation. The autotoxic agent cannot be identified by present-day tests; it is certainly not lethal. An analogous case is the trichophytide—a generalized eruption found in the occasional patient with ringworm of the glabrous skin; a truer analogy is with the tuberculides; another perhaps, though less true, with the eczematides. Autolytic eczema has, however, an origin, character, and independence of its own and, taken in time, is readily curable by eliminating the cause.

The Main Features

In any skin disease it is advisable to examine the whole cutaneous surface, never to omit examining legs and feet, for it sometimes happens that the patient thinks the doctor unlikely to be interested in her "old leg." An incomplete or missed diagnosis will miscarry only to increase the patient's suffering, threatening greater severity and a continuance of the disease with added difficulty in its control.

In autolytic eczema the signs are those of a systemic affection. The patient is usually ambulant, a woman, the average age of occurrence 50 years; and the lesions may erupt to reach their peak even in so short a time as seven days. The course of the eruption is this: a primary dermatosis in a lower limb from an infected confined dermatitis, ulcerative or other, below the knee; this had begun with an overlooked or neglected trauma, however small, such as a scratch, a burn, or the pulling out of a hair, to breach the surface; and, being still unhealed, is followed in an average of nine months by a secondary eczema erupting in the positions described, the earliest crop of vesicles occurring on the forearms. Autolytic eczema is not seen in extensive acute dermatitis in the leg, but only where the area affected is comparatively small and lasting; in so-called "eczema rubrum" and the moist-surfaced "eczema madidans," both more or less acute or subacute in their behaviour, the disease is not seen.

Subjective symptoms are much complained of: hot tense skin, almost intolerable itching, loss of appetite with furred tongue, malaise, distress of mind, insomnia. The patient is apyrexic, and shows no characteristic changes in the blood that can be discovered by tests at present known. Perhaps these facts can be taken to mean failure of immunity response as is believed to happen in protracted disease that is localized. In this case the autolytic eczema develops unchecked. The patient feels ill, depressed, and miserable, chiefly from the subjective discomfort and unhappy self-consciousness created by the disfigurement of face and neck by oedema and vesicles, as well as the fear of infecting others. Itching precedes the outbreak of the autolytic eruption to give warning of its coming, usually worst in the areas about to erupt, but by and by becoming widespread and paroxysmal in attack. The visible eruption begins in an acute phase superimposed locally on the primary focus of inflammation; the secondary eczema follows on, passing through an initial stage of pruritus to papulation, then full efflorescence in an oedemato-vesicular eczema, far distant from its source. Clinically this progression can be observed in its orderly sequence.

The secondary autolytic eruption bears no resemblance to the original leg or ankle inflammation out of which it arises. The primary patch becomes red and painful, pervaded by a mixed pyogenic infection, and has come to a standstill in the healing. Is it this changed excited dry state of the patch which determines the formation and absorption of a transmuted and toxic agent there, which calls out the autolytic eczema in its acuteness, sometimes to come and go afterwards in a subacute way?

Treatment: The Plan

Treatment, preventive and curative, must first be directed towards the primary source of the disease: here is the key to success. Once established, the autolytic eczema will refuse to go until this is healed. To prevent the secondary eczema, the use of moist permeable absorbent dressings, changed often till the surface has skinned over, is advisable, with the avoidance of all imporous dressings that stifle discharge. This, early in the autolytic outbreak, will prevent or abort the eruption.

The patient ought to be confined to bed, with six-inch bed-blocks under the foot of the bed to hasten the return circulation. The leg congestion being gravitational, this elevation will quickly help to control itching and heat and tightness of the skin, and will go a long way to expedite healing, shortening the time taken measurably.

Treatment of the local patch is best done by applying boric fomentations or wet compresses of hypertonic saline solution, replaced every four hours for three days, to be followed by acriflavine emulsion soaks on gauze, renewed twice daily, for a further ten days. In the case of an open ulcer, the cleansing foment is, after the first three days, followed by carefully adjusted "red lotion" moist dressings morning and night; later, iodine-and-starch paste is applied as a thick spread, changed once a day, then, with improvement, once in two or more days. Bandaging should be firm and supporting, extending from the toes to below the knee, to counter the passive venous congestion of the leg, which only delays repair. This paste, with a tight bandage in the daytime and bed-blocks at night, is far and away better than the Unna-paste-impregnated bandage, which only holds up and confines any discharge, to become potentially, sometimes actually, harmful.

With the conversion of the hot dry surface of the primary patch into a moist freely discharging area, the patient is relieved of much discomfort; and the autolytic eczema begins to fade spontaneously, having itself needed little actual attention beyond the direct application of zinc cream morning and night, or the painting on of a weak ichthyol-in-calamine liniment (ʒi to ʒviii), as being protective and antipruritic. As covering for the arms cotton sleeves are cool and more acceptable to the patient than lint and bandages. When the scaling stage is reached, which is the end-process, a simple cold cream at nights is all that is required, any dressings being discarded

With the appearance of autolytic eczema, to secure relief for the itching, with peace of mind and enough sleep, nothing is so effective as fractional doses of phenobarbitone with bromide at spaced intervals for as long as is necessary. Autohaemotherapy is of some service at the start, so is non-specific protein therapy, though neither need be overdone or its value overestimated.

The diet should be lacto-vegetarian and salt-free, with an ample daily allowance of fluids (five or six pints, all told); condiments and spices are to be forbidden and over-flushing of the skin avoided. Two drugs are of real use, if indicated: acid. hydrochlor. dil. *B.P.*, given in full dosage soon after meals; and a one-drachm morning dose of magnesium sulphate in hot water, for a time, daily.

Summary

Autolytic eczema is not uncommonly met with in medical practice: the malady has increased in incidence during the war years. Much standing at work while suffering from a patch of open dermatitis in the leg is a predisposing cause, if an indirect one; thus far can autolytic eczema be accounted "occupational." The condition could not exist without the stubborn primary focus to begin it, and refuses to fade before this itself has healed. As a rule, the primary disease persists for long before the secondary outbreak appears; there is a wide, though varying and indeterminate, interval between the starting-point of the one and the other. Peculiarly, the trouble most often originates in a patch about the lower half of the leg or about the ankle; but not always; the primary mischief may occur in a localized dermatitis in the arm or elsewhere following injury. The typical expansive eczema autolytica follows a primary source in the leg; a milder, less extensive eruption when the local source is elsewhere. It is the rule that the eruption breaks out unexpectedly. What actually times and detonates the outbreak has yet to be determined.

The secondary eczema does not behave like a septic toxaemia, to show massive invasion by way of venous or lymph channels: the course taken, and the ready control by early treatment before secondary characters add themselves to the vesicular eruption, suggest a non-virulent auto-intoxication with sensitization. Sepsis alone does not afford so satisfying an explanation as does the theory of causation by autotoxic dermolysin, the constitution of which is not made manifest by present-day test methods.

It is not to be forgotten that "the skin faces both ways," having an internal surface coextensive with the external and of more importance to the bodily economy. Clearly, the mode of conveyance is vascular, the lysin reaching and acting upon the skin itself from within by way of the capillary loops of the papillary body, likely enough erupting at points of slowing in the circulation there subject to the play of physical influences.

The condition is well and truly named "eczema," qualified by the descriptive term "autolytic." Knowledge of the whole subject is fragmentary still; yet we know that all true eczema is in its proper form vesicular and reactional; that the correct treatment should not be symptomatic merely, but, to be radical enough, ought in the absence of a specific cure to aim at removing the cause. If the remedy is suspended or is unsuitable the disease may take a firmer hold, to become aggravated and in its course lengthy and perverse.

SEGMENTAL MOVEMENT OF THE PUPIL

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In 1911 C. H. Sattler described a pathological movement of the pupil which he called "Wurmförmige Contractionen der Sphincter Pupillae." It is a segmental movement, or twitch of the iris margin. It may be seen in a pupil which has no normal reaction to light, or in some cases in which the light response is present but much diminished. At any one moment during the examination of such a pupil only a single twitch may be apparent; or another similar twitch may appear at the same time further along the pupil margin. Loewenstein described some further cases in 1917 and 1919. He called the phenomenon "Harmonica Contractionen der Sphincter Pupillae." The worm contraction, or undulate contraction, of the pupil border is much less commonly seen than a single segmental movement or double synchronous segmental movement of the pupil in the field examined. The synchronous twitch giving the concertina-like movement would seem to be due to feeble impulses arriving at the same time, while the undulate movement occurred when these feeble impulses arrived at contiguous parts of the pupil border at slightly different times. The amplitude of the movement varies in different cases. Sometimes it can be seen with the naked eye, as in the patient quoted below blinded by quinine. The monocular loupe (×10) or the low power of the corneal microscope (F/55 mm.) suffices for the recognition of most cases. Only the large inactive pupils of blind or near-blind cases of luetic optic atrophy required the higher powers of the corneal microscope for the recognition of the tiny abnormal movements which were present. They were best seen in the beam reflected from the lens surface. We have been able to observe a progress in amplitude of this segmental movement in a man who had paralysis of the pupil as a result of head injury. At first the movement was tiny, gradually increasing in extent with recovery until there was an entire contraction of the pupil.

The phenomenon has not stimulated much curiosity. In order to determine whether or not the sign had any localizing value a series of cases were examined. Of three cases of luetic optic atrophy with no light projection and large inactive pupils, examined under high magnification, two showed segmental contraction of small amplitude and one an undulate or travelling contraction of the pupil border. Two cases of post-traumatic optic atrophy having no light projection in the affected eye showed segmental contractions. Patients with partial field loss after head injury and patients with partial field loss in glaucoma showed no segmental movement. One man with Leber's disease having a visual acuity of 3/60 Snellen, right and left, had a marked segmental movement. A middle-aged healthy man blinded by quinine showed active segmental movement from the outset of the observed period, which extended over two months. The movement gradually acquired greater amplitude, merging into a total pupillary response to light. Even when the total response to light was established the segmental quality was evident in relaxation until it finally

disappeared. Two cases of retrobulbar neuritis had those abnormal movements, and in these the pupils were markedly dilated. In the following cases the motor side of the pupillary arc was presumably affected. A middle-aged man sustained a basal fracture of the skull in falling off a bus. He had good vision in both eyes, but had a complete third-nerve palsy on one side, and was Wassermann-negative. There was an undulate movement of the pupil border. A similar case observed over some months gradually recovered and the segmental movement merged into the normal total response. An elderly woman, having good vision in both eyes and Wassermann-negative, developed an internal ophthalmoplegia of vascular origin, and in a pupil which was immobile directly and consensually to light segmental movement was seen. A young married woman —Wassermann-positive, myopic-astigmatic, with good corrected distance vision—complained that she could not read. Both pupils were dilated and responded poorly to light, and there was bilateral paresis of accommodation. Both segmental and undulate contraction of the pupil were seen, and occasionally there was a feeble total movement of the pupils. This woman has been observed over 18 months and the signs are unchanged; there has been no recovery with establishment of the normal contraction. Her antisyphilitic treatment has been erratic. Two cases of unilateral Adie's pupil showed the abnormal movement. Squinting amblyopes never showed the abnormality.

To watch the behaviour of the pupil in this respect under the influence of factors acting peripherally, routine mydriasis with homatropine 1% was studied. After about 10 minutes the lessening total contraction gave place to segmental contraction before immobility. On the other hand, no abnormal movement was seen after mydriasis from subconjunctival injection of cocaine 2% with adrenaline.

Discussion

This pupillary unrest may occur, then, in sufficiently severe disorder of the afferent or efferent nervous paths to the sphincter of the pupil. Further, it may be induced by the peripheral action of mydriatics which inhibit the choline flux, but not by those mydriatics which stimulate the sympathetic. It is not seen in the contracted pupil. It would seem to be due, first, to diminished conduction in the nerve paths to the sphincter pupillae, for the movement is seen only in pupils of diminished response; and, secondly, there must be a pathological variation or inequality of flux within the nerve plexus. Some vestigial impulses get through and produce a local twitch, and in the immediate neighbourhood these impulses fail, or arrive after an interval to produce an undulate reaction. The chronaxie of the nerve paths to the sphincter is unequal throughout its distribution in these cases. Wolfrum (1926), when examining the minute histology of the pupil, was struck by the radial distribution of the nerve fibres entering the sphincter pupillae, and he speaks of the Sattler phenomenon. If the distribution of the third nerve to the sphincter of the pupil were a fine uniform plexus it would be difficult to understand a local emergence of movement, but as it is supplied by twigs running into the muscle fibres and at right angles to them the explanation of the origin of the movement becomes acceptable.

Finally, the sign, so far as this short investigation will allow us to conclude, would not appear to have any localizing value; it is a fibrillation of the pupil resulting from impaired integrity of the nervous arc of the sphincter pupillae occurring at any part of the arc.

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A. M. Harvey and F. T. Billings (*Amer. Heart J.*, 1945, **29**, 205) report three cases of coronary occlusion after the institution of therapeutic hyperpyrexia for sulphonamide-resistant gonococcal urethritis. All the patients were young adults with no previous cardiovascular disease. In no instance was the patient critically ill. Electrocardiograms in each case showed progressive changes similar to those observed in patients with occlusion of the anterior ascending branch of the left coronary artery.

Medical Memoranda

Fistula between the Small Intestine and One Horn of a Uterus Bicornis

The following notes of an unusual case of fistula may be found of interest.

CASE HISTORY

A single woman of low-grade mentality, 28 years of age, was first seen in March, 1944, at the obstetrical department, where she was found to be pregnant. The pregnancy was complicated by hydramnios and confirmed by radiography. On May 29 she was prematurely delivered of a stillborn exomphalic male foetus. The puerperium was characterized by an irregular temperature with rather offensive lochia, but she soon settled down and was discharged on the 14th day.

On July 6 she was readmitted complaining of an offensive vaginal discharge and severe perivulval irritation. The vulva was grossly excoriated and profuse discharge was coming from the vagina. On vaginal examination, among other debris several undigested cooked green peas were seen coming through the cervix uteri. The patient had eaten peas four hours earlier. The discharge continued while she was under observation, and consisted of undigested food giving bile-pigment reactions. It was obvious that a fistula existed between a high part of the intestinal tract and the uterus.

On July 26 the abdomen was explored and on the left side of the pelvis a curious pyriform uterus was seen. At the fundus there was an adherent matted mass of small-intestine coils. The coils were gradually separated, and one was found welded on to the fundus. On separation this coil had an opening the size of a sixpence continuous with the uterine lumen. Both openings were closed.

Further examination of the uterus revealed the fact that the pyriform uterine swelling was an enlarged horn of a uterus bicornis. Separate Fallopian tubes opened into the apex of each horn. It is probable that the fistula had resulted from an attempt to end the pregnancy.

I am indebted to my colleague Mr. Barnie-Adshead for the opportunity to operate on this case, and to Dr. J. C. Miller for help with the case notes.

Birmingham. B. T. ROSE, Ch.M., F.R.C.S.

Melaena due to Peptic Ulceration of a Meckel's Diverticulum

The case recorded below seems of sufficient interest and rarity to merit description. The occurrence of peptic ulceration in a Meckel's diverticulum is rare in any country, but seems particularly rare in England. In a review of the literature up to 1934 (Johnston and Renner, 1934) 60 cases of the condition had been described, of which only seven had come from English journals.

Meckel's diverticulum, a remnant of the vitelline duct, is present in 2% of the population, and is one of the sites of heterotopic gastric mucosa formation. It is prone to the same diseases—of which peptic ulceration with haemorrhage is one —as the stomach and the first part of the duodenum. The majority of cases occur in children and young adults of the male sex, although two of the four cases reported by Chesterman (1935) occurred in the female. The presenting symptom is rectal haemorrhage. The bleeding is often recurrent and may produce a severe degree of anaemia. Pain is not always present, but when it occurs is colicky in type and umbilical in situation. In the absence of perforation there is usually no clinical abnormality detectable on abdominal or rectal examination. It is impossible to demonstrate the diverticulum on radiological examination.

CASE REPORT

A boy aged 16 was admitted on June 24, 1944, with abdominal pain and the passage of blood per rectum for the previous 13 hours. The onset was sudden, and occurred while he was at work as a railway porter. The pain was colicky, and was situated in the region of the umbilicus; the attacks of colic lasted a few minutes and recurred every few minutes. The passage of blood coincided with the onset of the colic. While in the ward he passed several ounces of dark-red blood. There was no vomiting. He gave a history of three previous vague attacks of "stomach-ache" associated with constipation during the past year. Each attack lasted about one week. He had no previous melaena.

On examination the tongue was furred. The abdomen showed slight generalized tenderness and rigidity, but no mass could be felt. Rectal examination revealed the presence of blood, without any other abnormality. A pre-operative diagnosis of intussusception was made, and operation was proceeded with immediately.

Operation.—A right mid-abdominal split-rectus incision was made under open ether anaesthesia. There was no evidence of intussusception. The whole of the large bowel and some coils of the small bowel were distended with blood. On further search a Meckel's diverticulum was found on the antimesenteric border of the small bowel, 2½ ft. from the ileo-caecal valve. The diverticulum and the

whole of the bowel distal to it were full of blood, while the proximal bowel was collapsed and normal in colour. The diverticulum itself did not show any external evidence of inflammation, but there was a well-defined indurated area near the base. The diverticulum was excised and the bowel repaired transversely. The abdomen was closed without drainage.

He made an uneventful recovery, and was discharged 20 days after operation.

Examination of Specimen.—On section the absence of generalized inflammation was confirmed. Near the base was an indurated area half an inch in diameter, in the middle of which was a shallow ulcer a quarter of an inch in diameter, involving the mucosa only. In the centre of the ulcer was the open lumen of a small blood vessel from which blood could be expressed. Microscopical sections taken through the middle of the ulcer showed the presence of gastric mucosa with oxyntic cells.

I wish to thank Dr. H. H. MacWilliam, medical superintendent of Walton Hospital, for permission to publish this case; and to Dr. R. Y. Dawbarn for the preparation and examination of the microscopical sections.

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Large Foreign Body in Stomach, with Complete Absence of Usual Symptoms

The following case may be considered interesting enough to merit publication.

CASE HISTORY

The patient, an African woman aged 29, mother of four healthy children, was admitted from the out-patient department with a diagnosis of "abdominal tumour"; she was a well-developed and well-nourished woman of medium height, and weighed 8¼ st. She gave a history of "a lump in the belly," which had been present for about five years, was getting larger, and now interfered with her when weeding, as she found it difficult to stoop. She had no pain, vomiting, or other disturbance, and there were no signs of wasting or lack of nourishment.

On examination a large swelling was visible, extending from the left costal margin into the pelvis. It was smooth and firm to the touch, not tender, and was easily movable in any direction. This movement caused no discomfort of any kind. The patient had a very good appetite, and could eat a large meal of rice, fish, and vegetables without any discomfort. She was a very cheerful person, and looked upon her condition as a joke.

Owing to the size of the tumour I was forced to make a rather large incision in the stomach. The cardiac end was delivered without trouble, but the pyloric end was firmly gripped, and I had some little difficulty in releasing it. The mass when removed was a complete cast of the stomach with prolongations into the oesophagus and the duodenum. It was very firm in consistence, it could be dented with the finger, but the finger could not be forced into the mass. On section it had the usual appearance of a "hair-ball," consisting of fibres, mainly mango, rice grains, and other food debris. The patient made an uneventful recovery.

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A Fibroma weighing 320 Grammes growing from the Posterior Vaginal Wall

Owing to the rarity of its nature, the following case may be of interest to others:

The patient—a married nullipara of 40—came up complaining of a blood-stained vaginal discharge for two months. She had very little control of micturition but was otherwise well. Her periods were regular and lasted 5 days in every 28. On examination a hard mass 3 in. in diameter was felt completely filling the vagina. It was dark red in colour but not friable, and was thought to be a cervical fibroma.

At operation, performed by Mr. Clifford White on Oct. 28, 1944, it was possible to pass a finger above the tumour and a normal cervix could be felt. The tumour was then found to be arising from the posterior vaginal wall 2 in. below the cervix. A left-sided Schuchardt's incision was made, but, owing to the size of the tumour, removal had to be by the process of morcellement. When about one-third had been removed in this way the capsule was stripped and the remainder of the tumour shelled out. The bed was obliterated with catgut sutures and the vagina and perineum repaired. The tumour was hard and not very vascular. It weighed 320 grammes and was histologically a fibroma.

Secondary haemorrhage from the perineal incision occurred on the ninth day. The bleeding-point, which was in the region of the internal pudendal artery, was ligated; the wound was packed and sulphanilamide powder insufflated round the edges. Four pints of Group O (IV) blood were given. Recovery thereafter was good. The vagina healed well, and when seen three months after operation the patient's condition was quite satisfactory.

I am indebted to Mr. Clifford White for permission to publish the above details.

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Reviews

BONE-GRAFTING FOR FRACTURES

Bone-Grafting in the Treatment of Fractures. By J. R. Armstrong, M.D., M.Ch., F.R.C.S. Foreword by R. Watson-Jones, M.Ch.Orth., F.R.C.S. (Pp. 175; illustrated. 25s.) Edinburgh: E. and S. Livingstone. 1945.

This may be regarded as a supplement to Mr. Watson-Jones's book on fractures. The amount of work the author has put into it, considering his Service commitments, is truly commendable, even allowing for the aid of his enterprising publishers. As it seems likely that this is but the first edition of a work which will rapidly be added to, we venture to make some suggestions.

The descriptive operative surgery of the past has often been rendered valueless by the lack of analytical assessment. When Mr. Armstrong is in a position to quote statistics upon results his work will be more valuable. The justifiable enthusiasm for the onlay graft (and he was less enthusiastic only two years ago—see *Lancet*, Aug. 14, 1943) should be tempered by acknowledgment of the pioneer work of M. S. Henderson and of Willis C. Campbell. The latter has admirably described and illustrated the technique, to which little has been added since. The meaning of the term "creeping substitution," applied to the replacement of dead graft by living bone, may be well enough known, but it would be worth while drawing attention to Phemister's contribution to the subject. The question of the osteogenetic properties of the tibia is badly stated and should be clarified. In spine grafting the idea of roughening the neural arches with a chisel or file would be scorned by those surgeons who count their spine grafts in hundreds. Mr. Armstrong should realize that the operative treatment of adduction fractures of the femoral neck did not start with Smith-Petersen, whose nail, after all, is merely a mechanical derivative of the fibular graft previously in common use in Holland. Our own Hey Groves contributed something to that problem at least 30 years ago.

It is interesting to see how Mr. Armstrong differs from his sponsor (*Fractures and Joint Injuries*, 3rd edition) in some important respects. For the Monteggia fracture the former does not hesitate to excise the head of the radius at the same time as the ulna is grafted; the latter condemns the procedure. Neither gives us statistics to indicate which is right. Armstrong uses an Esmarch's tourniquet; Watson-Jones does not like it. The former is even prepared to leave a tourniquet on the leg for two or three hours, and not remove it until plaster has been applied. This is bad. The liability to ischaemic lesions of nerves, the reduced vitality of exsanguinated tissues, reactive hyperaemia, and the constrictive effects of plaster, form a serious combination of danger factors. Mr. Armstrong, no doubt, is a gifted technician, and even if his results are impeccable his teaching should be safe for the not-so-gifted. It is all very well for Watson-Jones to write in his foreword hyperbolically about the infection of a closed fracture being a "disaster worthy of a court of inquiry." Devitalization of tissues is well known to be an excellent breeding-ground for infection, and a book which condones it should equally be criticized.

We do not think that Mr. Armstrong has altogether been helped by Mr. Hennell's coloured photographs, in which so often a very dark blue background obscures the detail of the instruments being used. The lavish scale upon which this book has been produced should be noted at a time of paper scarcity. If printed in uniformity with its bigger companion by Mr. Watson-Jones, and if blank spaces were filled, it could have occupied a quarter less paper. One has a feeling that it is premature and has added little of real value at a time when the practice of bone-grafting is still in a state of flux.

RADIOLOGY IN 1944

The 1944 Year Book of Radiology. Diagnosis, edited by Charles A. Waters, M.D.; Associate Editor: Whitmer B. Firor, M.D. Therapeutics, edited by Ira I. Kaplan, B.Sc., M.D. (Pp. 448; illustrated. 31s.) Chicago: The Year Book Publishers; London: H. K. Lewis and Co.

In spite of five years of war the *1944 Year Book of Radiology* well maintains the high standard of former years. Because of the restrictions of the war the papers reviewed come, in the main, from North and South America and the British Empire.

The diagnostic section, occupying some 232 pages—rather more than half the book—contains many references of great interest. In the skeletal section are accounts of *x*-ray appearances in yaws and leprosy and a description of a case of the Morgagni-Stewart-Morel syndrome (hyperostosis of the calvarium associated with endocrine and mental disturbances). In the chest section L. L. Robins's paper on fifteen cases of bronchiogenic cysts is summarized, and also Kerley's work on the aetiology of erythema nodosum and the *x*-ray signs in the chest. Notes are included on the pulmonary changes in strongyloidiasis, tularaemia, and coccidioidomycosis.

Articles of interest on the heart are those on calcification of the valves and pericardium, angiocardiography in patent ductus and rheumatic carditis, the technique of angiocardiography, and on the *x*-ray signs of patent ductus. Clayton and Schatzki's account of the changes in the gastro-intestinal tract in sclerodermia of the oesophagus, small intestine, and colon is noted, and also a paper on the same subject by Lindsay, Templeton, and Rothman. There is an interesting description of Schatzki's technique for the small-intestine enema given through a duodenal tube, and in the obstetric section there is reported Chassar Moir's investigation into the soft-tissue shadows of the pregnant uterus, with special reference to placentography.

Again, the section on radiotherapy, without revealing any startling new developments, contains a comprehensive survey of the year's work in this field. The *1944 Year Book* is, as before, a most welcome compendium of radiological information.

EFFECTS OF CLIMATE ON MAN

Climate Makes the Man. By Clarence A. Mills, M.D., Ph.D. (Pp. 186. 7s. 6d.) London: Victor Gollancz. 1944.

This chatty little book is written in a style unlikely to appeal to the medical reader. The first person singular is mentioned with an unfashionable frequency; experimental animals are given Christian names such as Ivan and Hilda; the dog is called "man's closest companion"; and man himself when not "I" is "homo sapiens." There is an arch facetiousness about the book, as when the author finds it necessary to assure the reader that a scientific colleague's interest in brothels was "purely platonic." As it is difficult to believe that the mind of a professor of experimental medicine really works at this level, we must assume that the book is a bad example of "writing down to" the lay public and that the more intelligent section of the laity will feel appropriately affronted.

This is a pity, because the book contains a lot of most interesting information not readily available elsewhere about the effects of climate on the life and health of men. Such diverse subjects are mentioned as the effects of climate on vitamin needs, longevity, the onset of puberty, psychological reactions, the incidence of disease, the outbreak of war, and the pageant of history. The information given is accurate, though often so superficial that the reader longs for a reference list.

Perhaps Prof. Mills will now write a bigger book on the same subject for doctors or for the intelligent laity.

THE HAIR AND SCALP

The Hair and Scalp. A Clinical Study. (With a Chapter on Hirsuties.) By Agnes Savill, M.D., F.R.C.P.I. Third edition. (Pp. 304; illustrated. 16s.) London: Edward Arnold.

Not the least of Dr. Savill's achievements has been her success in getting a new edition of this excellent work published in the sixth year of the greatest war known to history. The story of her struggles forms one subject of the interesting preface to the new volume. The strong point of this book remains the account of the physical properties of the human hair and their relations to the problems of cosmetics and the minor capillary disorders which form so large a subject of exploitation to the hairdresser and beauty specialist and in which the ordinary medical man is commonly so ill informed when called upon for advice by anxious patients. He need not remain so if he takes the trouble to read and digest Dr. Savill's discussion of these problems. She has again had the advantage of Dr. Astbury's help. He contributes the chapter on the molecular structure and elastic properties of hair, and in this edition has had to modify his views in some matters, notably in his discussion of the methods of permanent-wave production. It will probably be news to many that permanent waving can now be achieved at a comparatively low temperature. This discovery we owe to Prof. Speakman of the Department of Textile Industries, Leeds University. It depends on the use of chemicals, first to relax the hair to make it take the shape of the curler more easily and then to harden it again and fix it in the curled condition. It seems that this method of permanent waving, though it cannot be said that it does no harm to the hair, is less dangerous than the other methods, which need exposure of the hair to very high temperatures over some two and a half hours. This British discovery has been widely exploited and is very popular in America, but in this country its development has been hampered by the necessity for concentration on war effort, and it is still far from being generally known on our side of the Atlantic, though practised by some London trichological artists.

Another very interesting section of this book is the chapter on hirsuties, one of the most serious cosmetic disasters to which the female sex is exposed. Dr. Savill has now been the leading woman dermatologist in this country for a good many years and has probably had more experience in treating this condition than any of her male colleagues. She has embodied the results in this chapter, which should be studied carefully. Every dermatologist knows that hirsuties is a difficult condition to treat, but many will feel after reading Dr. Savill's discussion that it is far more amenable than they have been accustomed to consider it. We once more commend this work to all who are concerned in the care of the hair and scalp, whether they are members of the medical profession or not.

The *Dentists Register* for 1945 has now been published for the Dental Board of the United Kingdom by Constable and Co., Orange Street, Leicester Square, W.C.2, price 15s. The total number of names appearing at the end of last year was 15,438, being 34 more than the figure for 1943. All but two of the new entries were of persons registered as graduates or licentiates.

Preparations and Appliances

DEVICE FOR FILLING BLOOD SEDIMENTATION TUBES

Dr. M. M. CONRAN writes from Cork Sanatorium, Buttevant, Co. Cork:

The accompanying sketch shows a very simple device for the filling of blood sedimentation tubes. By its use a standard technique can be maintained, and because of its speed all six tubes can be filled within a minute. It consists of a rubber tube, fluted at one end and fitted with a small rubber bulb at the other. It can be made from a discarded catheter and a medicine dropper.

The procedure is as follows: The fluted end is fitted to the top of the glass tube and then both tubes are held in the middle by the left hand. The bulb is slightly squeezed and the glass tube inserted into the blood container, which may be steadied by an assistant or in "plasticine." The bulb is then released and by the suction developed the blood rises in the tube. By alternately squeezing and releasing the bulb five times standard mixing of the citrated blood is obtained. The blood is then brought up slightly above the 200-mm. mark, and the rubber tube squeezed against the glass one by the left thumb. The final adjustment is made by rolling the glass tube on the rubber one with the left forefinger, which causes a slight rise or fall of the blood, depending on the direction of the roll. Keeping the finger and thumb steady the tube is placed in the rack and pressed firmly down while the tubber tube is removed by a steady pull with the right hand.

With a little practice speed and accuracy are soon attained. I have found that the time taken to set six tubes is far shorter when using this method. I hope also that this simple device may be useful to those interested in avoiding the periodic mouthful of blood which is the distasteful experience of many.

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UNDERFED CHILDREN

At the end of the war of 1914–18 the majority of scientists on the Continent attached most importance to calories, while the interest of British workers was focused on the recently discovered accessory food factors. The British team in Vienna made their classical investigation on rickets and found cases of scurvy; but it was felt that, besides the widespread rickets and occasional scurvy, many more evidences of vitamin deficiency might have been found. Apart from the celebrated study on keratomalacia in Denmark we have little satisfactory information about the frequency of vitamin A deficiency. Scurvy and, still more, beriberi and pellagra were diseases of soldiers rather than of civilians, whose diet was made up of high-extraction flour and vegetables. But the studies made during the siege of Madrid have shown that under even worse conditions the specific deficiency diseases attack only those who are particularly susceptible. The majority suffer from general malnutrition or from secondary diseases, particularly tuberculosis. And in Madrid the specific deficiency diseases—pellagra, optic neuritis, paraesthesiae, and famine oedema—were rare among children under the age of 15.[1] It is probable that, rickets apart, the great majority of children in Central and Eastern Europe showed no definite signs of any specific deficiency disease, and suffered from general malnutrition or from secondary diseases, particularly tuberculosis. We have records of this general malnutrition as detected by clinical examination and by the pelidisi system. This particular system of treating anthropometric data has been criticized; but it has the merit that it gives measurements in figures, free from personal bias, of some deviation from normal, and this is reduced as the nutrition improves. These data could be used for comparison of the state of children to-day with that of children in 1919–21. The tuberculosis death rates in age groups 1–4 and 5–14 in Germany and in age groups 6–10 and 11–15 years in Vienna in 1920 were twice as high as in 1914.

It is impossible to form a correct estimate of the food supply in occupied countries before or after liberation. We know the rations: in most countries they covered over 90% of the possible foodstuffs, and were wholly insufficient to maintain even a moderate degree of health during the years of occupation. In country districts it has not been possible to enforce food control; in towns rations have been supplemented from all sorts of sources, ranging from the genuine black market to the workman who rides a bicycle into the country to buy food and sells some and keeps the rest for his family. A little is added to the legal price at every stage of these transactions. Those who could not themselves buy in the country or afford high prices have found it difficult even to get food to supply sufficient calories. In any case fats and animal protein have been scarce because imports of vegetable oils have been cut off, livestock have been killed off, cattle are lean, and milk yields poor. The increase in the knowledge of food requirements has, however, reduced the risk of deficiency diseases. It is said that owing to the wide use of vitamin D rickets became less common in Belgium than before the war. Special allowances have been made for children. Whole milk has been reserved for them, usually up to the age of 14 (but in Belgium and Holland the fat content has been reduced to 2.5%). The younger children have, on paper at all events, fared comparatively well; it is only above the age of 8 that the requirements according to the League of Nations standard have not been covered by the rations. In France and Belgium adolescents have had little more than half their requirements unless their food was increased from some irregular source.

Before D day there was evidence in the industrial districts of general malnutrition, in the failure, particularly of the older children, to put on weight, and a rise in the tuberculosis death rate. With the invasion traffic has been disorganized: it has become more difficult to transport food to the towns, and the distribution has become more unequal. The import of food to Paris was at its lowest in August of last year. Convoys were rushed in within a week of liberation, but with 4,000 bridges destroyed, four-fifths of the locomotives gone or out of order, and half the transport capacity taken up by the military, it has been impossible to keep up an adequate supply of food to the towns. Even now, with 1,250 bridges repaired and 10,000 lorries supplied, Parisians have still to depend on forays into the country to get food enough to live on; meat rations are irregular; milk arrives sour owing to the slowness of the trains; and only the youngest children can get a wholesome supply. There is more malnutrition now than before liberation. Conditions in Holland, Norway, Greece, and Yugoslavia are far worse than in France. Even if food could be distributed evenly there would still be a serious shortage. While fighting continues both in Europe and in the East it is difficult to spare the ships to bring over food from the great producing countries overseas. The easiest way to supply Europe would be to draw on stocks that have accumulated in Britain. When malnutrition was debated in the House of Commons on March 28 and 29 it was stated that the Minister of Food had sent, or agreed to release, to the liberated regions, which include some Mediterranean areas, 900,000 tons of food from our stock of 6 million tons. When we recall that in 1917, at the height of the U-boat campaign, our stocks were reduced to 1 million tons of grain and sugar for four days[2] we may well feel that we could now safely spare considerably more to meet this emergency. With the destruction of farms, the lack of fertilizers and implements, the interruption of spring sowing, and the flooding of large areas in Holland, this year's harvest will certainly be scanty. Further relief will be needed during 1945–6 to provide sufficient calories. Animal products will be short for several years, and supplies can be

[1] Grande-Covian, F., and Jimenez-Garcia, F., *Rev. clin. Esp.*, 1940, **1**, 323.

[2] Beveridge, W., *British Food Control*, Oxford University Press, 1928, pp. 91, 124.

obtained only by keeping down consumption in the more fortunate countries.

According to a recent report in the *Journal*[3] Dutch children, aged 7 to 15 years, brought over to England in February had been living for a long time mainly on bread, potatoes, and cabbage. They did not appear seriously wasted, but were generally undersized; they must have been much under weight for their size, as they gained up to 6 lb. 6 oz. in three weeks after arrival. Feeding these children presented no serious difficulty; the only precaution taken was to limit the amount of fat and the total calories during the first week. When the initial difficulties are over nutrition will improve on almost any diet that will provide calories. The typical dinners supplied to children in canteens run by relief organizations for malnourished children in 1919–21 provided daily an average of only 5 grammes of animal protein, the vitamins A and D of 70 ml. of milk, and almost no vitamin C. The children probably got some carotene and C from vegetables at home, but precious little animal protein; yet their condition improved steadily. Children from the areas of Holland where rations have fallen to 300 calories a day will be in a far worse condition. Experience among the International Brigade and Spaniards in concentration camps in Southern France showed that no state of starvation, except the final coma, is beyond hope.[4] In the Bengal famine the more severe cases were divided into (1) collapsed cases, likely to die without parenteral feeding; (2) the less collapsed cases, who were capable of recovery when fed by mouth; and (3) those capable of taking a simple milk diet.[5] For the first group intravenous injections of protein hydrolysates, containing glucose, riboflavin, niacine, and thiamin, were recommended. It was claimed that this treatment saved patients who otherwise would certainly have died. The second group needed to be fed with small amounts at short intervals; it might be necessary to feed by nasal tube. This group and the third group were given liquid mixtures supplying 800 to 1,200 calories per day; about half the calories were provided by sugar (4 oz.); the remainder were made up with flour or milk. Recent studies on the efficacy of various nutrients in maintaining life have shown the special importance of aneurine; it would therefore be advisable to give one international unit of aneurine for every gramme of sugar.

TREATMENT OF SEVERE STARVATION

In 1939 Elman and Weiner[6] reported the use of an acid hydrolysate of casein fortified by the addition of tryptophan and by supplementation with cystine or methionine for intravenous alimentation of human subjects; evidence was obtained of satisfactory utilization of the amino-acids, and favourable therapeutic effects were observed. The work of Elman and Weiner constituted a practical application of the observation of Henriques and Andersen[7] in 1913 that nitrogen equilibrium could be maintained in the goat when the sole source of nitrogen was provided by the intravenous administration of amino-acids. During the last few years numerous papers have appeared dealing with the clinical use of hydrolysates of protein for alimentation either by the intravenous or oral routes (for reviews see Gaunt[8] and Cuthbertson[9] and this *Journal*[10]); most of these referred to the use of the American product "amigen," a pancreatic hydrolysate of casein, and it has been stated by Allbright[11] that complete maintenance can be effected with "amigen" and glucose alone for as long as forty days. Some attention has also been paid to acid hydrolysates and to digests of meat prepared with papain. The ideal preparation is yet to be found; pancreatic digests are highly susceptible to bacterial contamination during their production and are therefore liable to be pyrogenic; papain digests, while relatively free from this disadvantage, may contain partial breakdown products of protein which are harmful, and the acid hydrolysates require fortification with tryptophan, which is not a very easily accessible substance. The only report so far published on the use of protein hydrolysates in the treatment of starvation has come from India (Narayanan and Krishnan[12] and Krishnan, Narayanan, and Sankaran[13]); a considerable measure of success was claimed as the result of intravenous administration of papain digests of meat together with glucose to patients who were so far weakened by starvation that they were unable to take anything by mouth. The Indian work was undertaken in conditions of such difficulty that a carefully controlled investigation was not possible, and the evidence for the favourable effect of intravenous alimentation rests on clinical observation only.

The food situation in the Netherlands is exceedingly grave. This applies particularly to the large towns of North-West Holland, where there is good reason to believe that few people have been getting more than 800 calories and where they may now be getting only about 400 calories daily. After considering the data available the Netherlands authorities and the military authorities concerned agreed that the food situation in N.W. Holland was so serious that special measures would be required if a large proportion of the population were to be resuscitated; being impressed by the evidence in favour of the use of protein hydrolysates, they invited the Medical Research Council to advise on the provision of suitable preparations in adequate quantity. At the same time a scheme for the application of the emergency treatment was agreed upon with the Netherlands authorities; this scheme included not only the formation of relief teams but also full provision for clinical and laboratory study of the cases of extreme starvation, so that the best method of treatment might be determined without delay. As the result of work carried out during the last eighteen months the Medical Research Council was in a position to give the necessary technical advice, and in view of the urgency of the need the Ministry of Food and the Ministry of Supply took immediate steps to increase production; with the whole-hearted co-operation of the firms concerned the amount of material which was

[3] Tauber, J., *British Medical Journal*, 1945, **2**, 488.
[4] Zimmer, R., Weill, J., and Dubois, M., *New Engl. J. Med.*, 1944, **230**, 303.
[5] Committee of Inquiry into Effects of Starvation, India Research Fund Association, *Treatment and Management of Starving Sick Destitutes*, All India Institute of Hygiene and Public Health, Calcutta, 1943.
[6] *J. Amer. med. Ass.*, 1939, **112**, 796.
[7] *Hoppe-Seyl. Z.*, 1913, **88**, 357.
[8] *Nutr. Abstr. Rev.*, 1944, **13**, 501.
[9] *Brit. med. Bull.*, 1944, **2**, 207.
[10] Leading article on "Intravenous Alimentation," *British Medical Journal*, 1943, **1**, 416.
[11] Bi-monthly Progress Report No. 10, Dec. 31, 1944, to Committee on Medical Research of the Office of Scientific Research and Development.
[12] *Indian med. Gaz.*, 1944, **79**, 158.
[13] Ibid., 1944, **79**, 160.

asked for was produced in less than the specified time. Since it also seemed desirable to test the efficacy of plasma and serum in the treatment of extreme starvation, large supplies of these materials were requested and were furnished by the Lister Institute. The work in Holland is now in progress. Representatives of the Medical Research Council and of the Ministry of Food, together with American experts, are acting, at the invitation of the Netherlands Government, as scientific advisers.

It is now depressingly apparent that the problem of treatment for extreme starvation is of wide extent; it concerns a proportion of British prisoners of war and large numbers of occupants of enemy concentration and labour camps. Quite recently the Medical Research Council, at the request of the military authorities, has nominated a further team of three experts to proceed to the Continent to study the value of protein hydrolysates in treatment of starvation; this team is already at work with full equipment for the investigation required. Provision has also been made, at the request of the Ministry of Health, for material to be available for repatriated prisoners of war who may reach E.M.S. hospitals in urgent need of treatment. All these demands have increased the need for medical personnel, and use has been made of Belgian and English medical students who were enrolled, trained, and organized in anticipation of such a need. Two methods of treatment were considered. In the first a solution of protein hydrolysate, which may be prepared by complete enzymic digestion ("amigen") or by acid hydrolysis and subsequent fortification with tryptophan, is given by intravenous infusion. The second method consists in administration of the hydrolysate by slow intragastric drip, and in this case the material is an enzymic digest of casein or meat in which the digestion has not been carried so far. In both cases glucose is given in large amount to provide energy and thus to spare the amino-acids for purposes of repair. Vitamins are also given to enable the glucose to be utilized and to prevent the development of acute deficiency states. It is anticipated that successful treatment should lead within three days to resuscitation to the point at which ordinary food may be taken.

It is impossible at the present stage to predict the ultimate value of the protein hydrolysate treatment in extreme starvation, although there is already evidence that the intractable diarrhoea which is a prominent feature of the condition responds well to the intravenous method. It is much to be hoped that the intragastric drip will prove to be a satisfactory alternative form of administration; if so it will become the method of choice, not only because suitable material is so much more easily accessible but also because its use will be free from the risks which, at present at least, seem inseparable from the intravenous administration of hydrolysed proteins. Apart altogether from the prospect that the availability of protein hydrolysates may provide a valuable therapeutic measure in the present medical emergency, the studies which will be carried out offer the promise of useful information for the future; the observations which are made may be expected to have a bearing not only on the immediate problem but also on the treatment of all conditions of malnutrition associated with impaired absorption from the alimentary tract.

CONGENITAL DEFECTS AND RUBELLA

A curious association between maternal infection in pregnancy and congenital malformations in the infant seems to be a new manifestation of rubella. It is unlikely that such a dramatic sequence could have been overlooked in the past. In fact Gregg,[1] who first drew attention to it, traced examples back only until late 1939. Moreover, the defect which first attracted his attention was a congenital cataract which did not conform exactly to any of the clinical types previously encountered. This observation naturally aroused great interest. In a preliminary survey in South Australia Swan and his associates[2] examined 61 infants and found 36 with these congenital defects—cataract, deaf-mutism, heart disease, and mental retardation. The history of these 36 revealed that in 31 of the mothers there had been an illness during pregnancy (usually in the first three months) which was thought to be rubella. In 4 infants there was no maternal history of an exanthem. The mother of the remaining infant, who had a congenital corneal opacity, had had mumps during pregnancy. Viewed in another way, the survey showed that 49 mothers who suffered presumed rubella gave birth to 31 infants with congenital defects; 9 mothers who had had measles in pregnancy all produced normal infants; 1 of 2 mothers who had had mumps bore a child with a corneal opacity. Continuing their observations the same team later reported[3] 10 further examples of congenital defects in association with maternal rubella. Adding these to their 31 previous cases and to the 68 cases reported by Gregg, they find an impressive total of 109 such associations in Australia alone. Further examples have been recorded in America by Reese[4] (3 cases) and Erickson[5] (11 cases), and by Hope Simpson[6] (2 cases) in this country. The main points of agreement in the published data appear to be: (*a*) that the association is with rubella and not with other transmissible diseases (though not without exception); (*b*) that the risk of congenital defect is greatest if the rubella occurs in early pregnancy (i.e., within the first three months); and (*c*) that there are infants with congenital defects in which no link with a maternal transmissible disease can be traced.

Any explanation of the possible sequence of events is to some extent bound to be speculative. The general inference is that the unknown virus of rubella (with virulence possibly enhanced in the war years) is showing the preference of certain viruses for developing embryonic tissue. This it does by attacking the foetus via the placental circulation just at a time when important developmental changes are taking place in the foetal heart and eye. The high incidence of congenital heart disease suggests to these observers that the rubella virus has a primary affinity for vascular tissue, the lens damage being explained by possible indirect action through the hyaloid artery. Swan[7] later demonstrated in 3 infants who died of their defects a disproportionate vascular damage in the kidneys, the principal lesion being a glomerular sclerosis. While this view of pathogenesis is supported by recorded examples of intra-uterine transmission of other virus infections,[8] certain questions remain unanswered. Is the association between presumed rubella and congenital defects a significant one, or does it arise from pure chance? Swan and his associates[9] admit that a survey of the kind they undertook is likely to attract reports of the positive event; hence their material must necessarily be selective, perhaps highly so. Secondly, was the maternal disease rubella? Gregg was

1 *Trans. ophthal. Soc. Austral.*, 1941, **3**, 35.
2 *Med. J. Austral.*, 1943, **2**, 201.
3 Ibid., 1944, **1**, 409.
4 *Amer. J. Ophthal.*, 1944, **27**, 483.
5 *J. Pediat.*, 1944, **25**, 281.
6 *Lancet*, 1944, **1**, 483.
7 *J. Path. Bact.*, 1944, **56**, 289.
8 *Johns Hopk. Hosp. Bull.*, 1944, **64**, 240.
9 *Lancet*, 1944, **1**, 615.

doubtful about this, but the other workers appear satisfied that it was so in most instances. In some cases the diagnosis was in retrospect unsatisfactory, and in others hardly justifiable. We cannot exclude the possibility of a chance association between congenital defects and true maternal rubella. A systematic investigation of rubella in pregnant women is called for.

CARBACHOL AND ITS ANTIDOTE

Recently two deaths have been recorded resulting from an overdose of carbachol. This is the pharmacopoeial name for the carbaminoyl ester of choline, which is sold in this country under the proprietary name of "moryl." Carbachol is used for these purposes: it is used by injection in a dose of 0.25 mg. for retention of urine or intestinal stasis, it is given as eye-drops to lower intra-ocular pressure, and it is also applied by electrophoresis in rheumatic infections. The first death occurred in an Oxford hospital due to a mistake by which the material intended for external application contained in an ampoule was injected under the skin, with the result that the patient received 400 times the dose intended. The second has now occurred due to precisely a similar mistake. In the comments which have been made concerning these fatal accidents no one has so far called attention to the fact that a completely effective antidote to carbachol is generally available. Carbachol acts in the same way as, though for a longer time than, the substance acetylcholine, which is known to be liberated in the body at the vagal nerve-endings. In excessive dose it causes violent intestinal contraction, vasodilatation, severe cardiac slowing, and secretion of mucus in the bronchioles. All these effects are promptly inhibited by the injection of atropine sulphate in the ordinary dose. Many antidotes are suggested for poisons of one sort or another, and these antidotes are effective in varying degree. Some are found in practice to have very little action at all. So far as it can be assumed that the human being behaves like the dog or the cat, it is safe to say that atropine is a perfect antidote for an excessive dose of carbachol, and that if it were given very large doses of carbachol would be immediately neutralized.

THE HEART IN RHEUMATOID ARTHRITIS

How far rheumatism and rheumatoid arthritis may be regarded as manifestations of the same disease, having a common aetiology, has been much discussed for many years. There are certainly points of similarity in the cardiac lesions, and they appear to occur more frequently than coincidence would allow. The report by Dennison Young and John Schwedel[1] of post-mortem findings in 48 cases of rheumatoid arthritis is therefore of interest. In only 6 of these cases were the patients under the age of 45 at death, and, of these, 1 appears to have died of acute rheumatism. In 24 cases the lesions were thought to have some resemblance to those of acute rheumatic carditis. Except in 2 cases all these lesions were old and healed, which is not surprising, as many of the patients were old. In several the valves were calcified. In 10 cases there was pericarditis. The incidence of disease on the several valves was similar to that of acute rheumatism; but the description of the valvular lesions is hardly detailed enough, and the incidence of mitral stenosis is not given. Microscopical examination of the myocardium showed Aschoff bodies only once, in a young patient; but again this is not surprising, as the majority of the patients were old at death. Scarring in the myocardium was found in only 2 instances, which seems an unduly low incidence for acute rheumatism. In one instance acute pericarditis was present at the age of 75, and in several bodies there was an obliterated pericardial sac without valvular lesions, which is a curious observation. In rather a large proportion of cases clinical examination had given negative results, perhaps because the lesions did not give rise to conspicuous physical signs.

From a cardiological point of view these cases were not typical of rheumatism. There was little cardiac disability; but it must be noted that the patients were for the most part unable to get about. Although the age incidence is different, we may recall the rheumatoid arthritis of children (Still's disease), in which pericarditis is not uncommon but endocarditis is rare. Young and Schwedel are inclined to think that rheumatoid arthritis and acute rheumatism are fundamentally the same. The question will remain undecided until the aetiology of both is known. While there is much to support the view that they have a common cause, there are considerable differences in morbid anatomy, clinical course, and response to salicylates. Further studies of the cardiac lesions of rheumatoid arthritis will be of interest.

[1] *Amer. Heart J.*, 1944, **28**, 1.

ADRENALINE AS AN ANALGESIC

Adrenaline has been used to reduce the pain of leprosy since the observations of Muir[1] in 1927 and of Wheatley[2] in the same year: they recommended the intramuscular injection of 0.25 mg. adrenaline—that is, 0.25 c.cm. of the pharmacopoeial solution—because of the striking relief it gave. In 1928 Muir and Chatterji[3] recommended ephedrine by mouth for the same purpose: 30 mg. ephedrine sulphate relieved pain in 15 to 30 minutes, and the effect lasted for 12 hours or longer. The most reasonable hypothesis to explain this action is that the pain is due to leakage of fluid from the capillaries at the site of the leprous reaction, leading to swelling and tension. Adrenaline would make the capillaries less permeable, arrest the leakage, and diminish the tension. Ephedrine would raise the concentration of the patient's own adrenaline by lessening its rate of destruction.

Ivy and his colleagues at the Northwestern University in Chicago[4] have recently investigated the statement that adrenaline has an analgesic action. There is the clinical evidence of its use in leprosy, and experimental evidence obtained by Kiessig and Orzechowski.[5] These authors observed a rise in the pain threshold after intravenous or subcutaneous injection of ephedrine and other sympathomimetic substances such as amphetamine and desoxyephedrine. Ivy and his co-workers injected 0.1 mg. adrenaline into the carotid arteries of dogs and into their veins. They measured the pain threshold by preparing the dogs with two metal fillings in the cuspid teeth, so that a current of measured voltage could be applied through the fillings. They determined the peak voltage necessary to produce the slightest reaction. After intravenous injection the threshold rose so that the dog's sense of pain was least after 45 minutes, and the diminished pain sense was still obvious after 2 hours. This diminished sensation was peculiar to pain, for the dogs' scratching and attempts to catch fleas continued after the adrenaline injection, when they were analgesic, as before. Similar observations were made on human subjects. The authors consider that there is a specific action of adrenaline on the pain-perceiving mechanism, and prefer this view to the possibility that the cortical stimulation, which the injection of so large a dose of adrenaline evokes during the next ten minutes, results in some reflex inhibition of the thalamic pain centres. They think the analgesic effect lasts too long to be explained thus.

[1] *Proc. roy. Soc. Med.*, 1927, **20**, 997.
[2] *Ann. Rep. med. Dept. Straits Settlements*, 1927, **18**, 71.
[3] *Indian med. Gaz.*, 1928, **63**, 198.
[4] *Quart. Bull. Northwest. Univ. Med. Sch.*, 1944, **18**, 298.
[5] *Arch. exp. Path. Pharmakol.*, 1941, **197**, 391.

A RAPID METHOD OF LOCATING SHELL FRAGMENTS, USING X RAYS

BY

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T/Surg. Lieut., R.N.V.R.

The following method of locating foreign bodies (metallic), with the assistance of *x* rays, is thought worthy of description by reason of its extreme simplicity and the rapidity with which it enables shell fragments to be removed when deeply embedded in muscle.

The method was developed in the County Hospital, Dover, where from time to time numbers of badly wounded patients were admitted as a result of naval actions in the Channel and hostile cross-channel shelling. The majority of these patients were severely shocked and had large pieces of shell fragments in their limbs.

It is difficult and time-taking to find and remove these F.B.s, particularly in the thigh. This task was aggravated when the F.B. eventually came to rest, deep in the limb muscle, some 10 to 12 in. from the entrance wound. The method has also been of use in removing F.B.s in the forearm and vertebral muscles. When the F.B. is palpable under the skin no accurate location is of course required.

The problem is to correlate accurately and quickly the radiographic appearance with the limb as it lies on the operating table. If anatomical landmarks are available the problem is to some extent solved, but with this apparatus no landmarks are necessary.

The Apparatus

(1) Camel-hair brush.

(2) Solution of gentian violet in ether.

(3) Strip of adhesive tape 30 in. long, containing symmetrically spaced lead shot (gauge 6 from a twelve-bore cartridge). This is made by placing a piece of tape, 1 in. wide by 30 in. long, on a table with the sticky side up. The shot is placed firmly on the sticky surface at intervals of 1 in. (See Fig. 1.) Cardinal points are marked by three pellets—i.e., at every 12 in. The pellets are enclosed by a second strip of adhesive tape placed over the first, adhesive sides together. (See Fig. 2.)

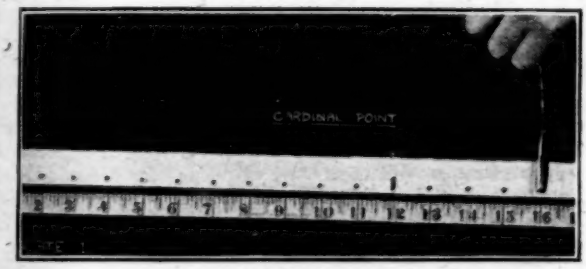

FIG. 1

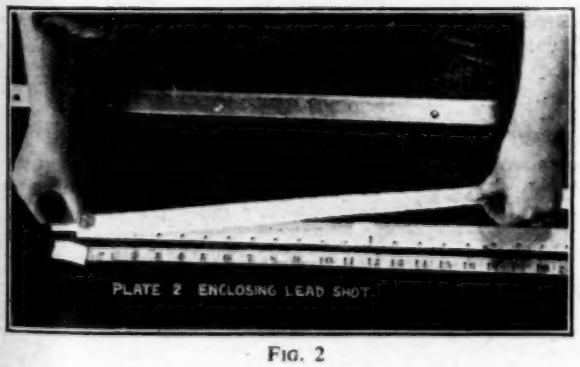

FIG. 2

Technique

The injured limb is stripped of clothing preparatory to examination and radiography. The tape is laid along the length of the limb and the gentian violet solution is applied in small dots to correspond with the lead shot in the tape, particular attention being paid to the cardinal points. (See Fig. 3.) A cardinal point is laid in the same transverse plane as the entrance wound where possible. The ether evaporates rapidly, leaving the aniline dye strikingly marking the skin. (See Fig. 4.) The whole technique takes but a few seconds, and every patient with a suspected F.B. can be marked as a routine. Thus at operation the gentian violet dots on the limb correspond to the opaque lead shot on the *x*-ray film. The transverse plane of the F.B. is at once evident. A lateral skiagram of the limb will

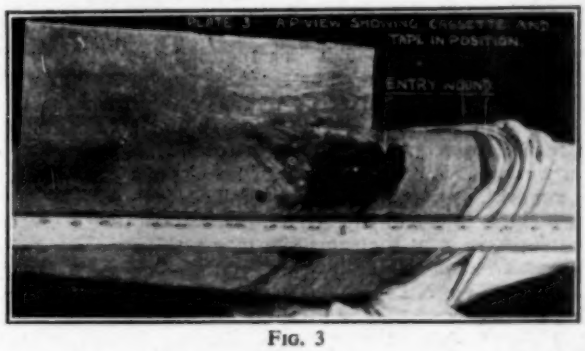

FIG. 3

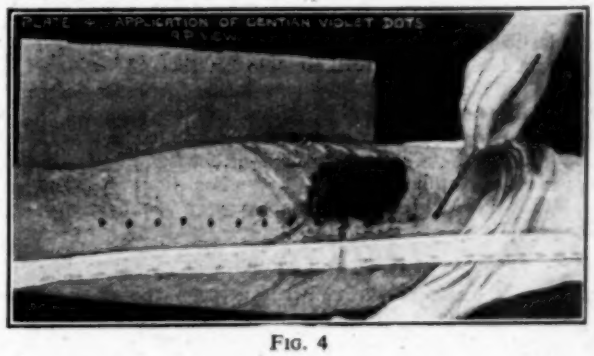

FIG. 4

show whether the F.B. lies anterior or posterior to or level with, say, the femur. The technique is not used on the lateral views as this is unnecessary and raises difficulties in the shot–F.B.–film distances to overcome distortion.

In no way is this method intended to compete with the more elaborate methods of F.B. location, which no doubt are of first-class use in more leisurely circumstances.

I am indebted to the Medical Director-General, Royal Navy, and to Mr. A. R. Jordan, F.R.C.S., medical superintendent of the hospital, for permission to publish. Acknowledgment is made to Mr. J. Sutherland, M.S.R., for his enthusiastic co-operation.

IMPERIAL CANCER RESEARCH FUND

The annual general meeting of the governors of the Imperial Cancer Research Fund was held at the Royal College of Surgeons on April 18, when the 42nd annual report was presented by Prof. H. R. Dean, the chairman of council. Appropriate mention was made of severe personal losses which the Fund has suffered in the death of Sir Humphry Rolleston, who was chairman for 16 years; Sir John Ledingham, who was a visiting research worker in the laboratories of the Fund; and Viscount Dawson of Penn, Sir Cuthbert Wallace, and Sir Thomas Barlow, all of whom had been closely connected with the Fund for a long period. The Fund during last year received in legacies over £48,000, a larger sum than in any previous year in its history. Subscriptions also increased by £827. Viscount Halifax was re-elected president and Sir Holburt Waring treasurer.

Scientific Work

A report was made on the work done by the seven members of the scientific staff and the four visiting research workers. Further study has been made of the retarding effect of sulphur inhibitors on carcinogenesis. Mr. H. G. Crabtree, working on the induction of tumours with pure chemical substances, has produced evidence that aldehydes and a number of other substances which specifically lower sulphur metabolism in cells cause not only a retardation but in certain conditions a reversal of the carcinogenic action of benzpyrene and dibenzanthracene.

Extensions of these observations are in progress, grouped around the central idea that chemical carcinogens, or their products, exert their influence through sulphur linkages in the cell.

Work has also been continued on the stimulating effect of wound healing on tumour development in mice. When papillomas and cancers appear in the scars of skin wounds it is rather natural to regard them as a consequence of the stimulus of healing, but there is no measure of the extent to which they may be ascribed to chance and to such stimulating action respectively. When tested it was found that more than half the tumours which appeared on scars did so entirely by chance, and the difference is insufficient to enable the remainder to be ascribed to stimulation. But the possibility that wound healing can in fact overcome refractoriness towards tumour development when this is due to latency of neoplasia is not ruled out. Some work suggests that multiple injuries are more effective than a single injury in overcoming this refractoriness, and that repeated excision at the same site may result in a number of localized tumours significantly greater than that due to chance alone.

The factors concerned in sarcomatous transformation during the transplantation of mammary cancers in inbred strains of mice have been investigated. So far as the work has gone the results emphasize the significance of the stimulation of fibroblastic growth by the carcinoma cells and the survival of the stromal cells owing to their being of the same genetic constitution as the cells of their new hosts. Another subject of investigation is the action of stilboestrol on induced prostate tumours in mice. When stilboestrol is applied at the time of tumour transplantation the growth of the tumour is retarded, or even completely inhibited, but when it is given after a palpable tumour growth has appeared it has been found to have no effect.

Hormonal Stimulation

Prolonged oestrogen treatment has been found to produce in the rat a tumour-like enlargement of the anterior lobe of the pituitary gland, but in the guinea-pig and the rabbit it has not this effect, while in the hamster the reaction takes place in other parts of the gland. It was thought possible to combine the stimulus provided by excess of oestrogen with some other hormonal change affecting the gland, the objective being to overload the physiological reactions of the gland in order to alter the purely hyperplastic character of the resulting growth and perhaps to reach a reaction of true malignant and invasive nature. Thiourea offered an easy method of physiological stimulation of the pituitary body, and by combined treatment with oestrogens and thiourea it is possible to submit the anterior lobe of the pituitary to two different stimuli of a physiological character—namely, absence of thyroxine and continuous presence of oestrogenic hormone.

Accordingly experiments, which are still in progress, have been tried out on rats. Thiourea (in the drinking-water) has been administered to animals in which stilboestrol pellets had been implanted, and it has been found that the character of the pituitary growths differs essentially from those treated with oestrogens alone. The results so far have been partial, but in at least one of the rats growth was able to invade the brain extensively. The cytological character of such tumours differs also from those produced only by oestrogens. In oestrogen-produced enlargements the hyperplasia consists only of chromophobe cells; in these experiments a remarkable abundance of acidophil cells is produced in the growth. It is considered that this effect may help in clearing up the doubt as to which cells are responsible for the production of thyrotropic hormone, but at present all that can be said is that the growths differ essentially from those produced by oestrogens.

R. A. Nelson and L. Duncan (*Bull. Johns Hopk. Hosp.*, 1945, **75**, 327) record their observations on 10 cases of acute syphilitic meningitis treated with penicillin. The immediate results were excellent from both the clinical and the laboratory aspects. Though penicillin did not appear in the cerebrospinal fluid even after repeated intramuscular injections, the drug was effective when given intramuscularly. No clinical relapse occurred. The treatment varied from 600,000 to 4,000,000 units in any one patient and the duration of treatment from 7½ to 11 days.

Reports of Societies

SCRUB TYPHUS

In a lecture at the Royal Institution entitled "Natural History of Scrub Typhus: A Problem on the Asiatic Front," Prof. P. A. BUXTON, F.R.S., said that the work of the last ten years on diseases of the typhus group had permitted us to understand certain sides of them much more clearly. It was now known that there was one disease of this group widely spread in Eastern Asia, transmitted from rodents to man by what we should call harvest mites. It should be known as scrub typhus or alternatively as mite-borne typhus. No good general account of it, particularly from the entomological side, was available in print. The disease was of considerable imperial importance.

The natural history of the disease was complex, and it might be best to approach it by indicating what was known about the so-called "harvesters" of Britain and Northern Europe. They were the larvae of *Trombicula autumnalis*; the so-called "chiggers" of North America were closely related. These larvae, a fraction of a millimetre long, attached themselves to the skin of rodents, man, birds, etc., and held on for several days. They dropped into the soil, moulted to become a nymph, moulted again to become an adult, and the female then laid eggs. Knowledge of the life history in the soil was fragmentary, but it seemed to be established that the nymph and adult were vegetarian or that they fed on decomposing organic material. It seemed that there was only one species in Britain, and there was probably only one generation in the year. The rabbit and the bank vole were important hosts of the larva. Larvae were common on the bank vole in late summer and autumn and after that diminished through the winter, to fall to a minimum in June. The species occurring in Britain seemed to be localized to light soils, particularly those which were chalky, and the distribution was often extremely patchy. It seemed probable that by applying methods worked out for problems of soil entomology much might be learned about the biology of this creature. In attaching itself to the mammal, the larval *Trombicula* ejected a digestive juice which caused an area of hyaline degeneration: this often took the form of a sharply defined column, vertical to the skin. Nothing was felt at the time when the larval mite was puncturing the skin, but some hours later irritation developed in some, but not all, human beings. The irritation might be quite serious, particularly to troops living in the field.

In South-East Asia there were many genera and species of trombiculid mites, and the larvae of a considerable number of them attacked man. Rodents were certainly important hosts, and the natural history of scrub typhus was very complex because of the variety of rodents in that part of the world. The larvae were important because they transmitted the infectious agent producing the disease called scrub typhus. The earlier work was mostly Japanese and showed that the larva of *Trombicula akamushi* fed normally on voles (*Microtus*), on alluvial soils. It transmitted infection from vole to vole or vole to man. As the mite fed on a mammal only once in its life history, the infection must be hereditary, and the virus had actually been recovered from wild adult mites. A similar or identical infection, always transmitted by larvae of *Trombicula*, was known or believed to occur in the great triangle bounded by Japan, New Guinea and Northern Queensland, Ceylon, and the Maldives. Within this great area the disease might occur under exceedingly different environmental conditions—e.g., in equatorial forest, or in grassland, or on barren islets and atolls.

In man the disease was generally serious. There was a small ulcer at the site of attachment of the larval mite, accompanied by high fever. The disease was widely distributed over the area of South-East Asia, and as men were living and fighting in jungle it had proved much more common than generally expected. It tended to be highly localized and to produce occasional outbreaks with a very variable but serious death rate.

Correspondence

Institutional Maternity Service

SIR,—The letters on women in labour by Dr. John Elam (April 7, p. 495) and on infant deaths by Dr. S. H. Waddy (April 14, p. 529) to my mind both point in one direction—namely, to the need for encouraging a home maternity service, and to discouraging institutional maternity provision. At present, particularly since the wartime establishment of maternity homes for the wives of Service men, the tendency has been towards more institutional maternity provision with, I believe, the following unhappy results.

(1) Owing to the shortage of nursing staffs in maternity as in other hospitals the woman in labour is only too often left alone "to get on with it," with or without an analgesic apparatus. This is a great cruelty to a young woman undergoing the tremendous experience and ordeal of her first confinement. She is a stranger in a strange place, attended through her many hours of labour by a series of nurses, who, however kindly intentioned, can only regard her as a number—bed or ward. At home she would undergo her great experience in the care of one nurse, probably the district nurse, to whom she is already known, and as Mrs. X. of Z. Street. It is sometimes stated that the presence of the patient's family, anxious as they inevitably are, intensifies the patient's own anxiety and consequently the difficulty of her labour. But is it not more likely that the patient draws comfort and reassurance from the nearness of interested people?

(2) Dr. Waddy refers to the harmful, even under certain conditions fatal, results of the institutional custom of rolling new-born babies into tight little mummies with arms pinioned. The justification for this is said to be that it induces sleep by the sense of security it gives by reproducing as closely as possible the non-stimulating intra-uterine environment. Even where physical damage is not done, may not the subsequent sleep represent not so much a reaction to a feeling of security as a withdrawal from life in the face of frustration of normal impulses to muscular activity and self-defence—a first withdrawal from a too difficult reality, setting a pattern for later regressions and withdrawals in the face of difficulty, and producing an inhibited and introverted personality.

(3) Another characteristic of institutional maternity not referred to by Drs. Elam and Waddy is that the baby spends most of the first ten days (or more) of its life away from its mother, who is allowed to hold it only at feeding times, and then frequently in the presence of a third person, the well-intentioned but officious nurse directing the whole process and often producing thereby an anxious mother and an agitated, lethargic (=withdrawn), or even shocked baby. (See *The Nursing Couple*, by Dr. Merrill Middlemore.) The late Dr. Ian Suttie (*Origins of Love and Hate*) postulated an inherent social instinct, and believed that the first personal relationship is spontaneously sought by the suckling with its mother. The development of this—all-important for the subject's future happy adjustment in life—is suppressed and crippled at its very beginning by maternity-home methods.

When the baby is not a first one a confinement at home is also far less upsetting to the "dowager baby." It is upsetting enough to have mother upstairs in bed and absorbed in a newcomer, but at least she has not disappeared, apparently for good. One little girl refused to accept her mother on her return with the new baby as the same one who went away. She said, for instance, "My other Mummy used to have a blouse like that." One can surmise what a shattering disturbance of her sense of security this acceptance of a complete loss must have meant.

Hygiene and asepsis have been allowed to outweigh all else in the modern development of maternity techniques, with the result that the profound significance of the personal experience and emotional development of the human beings involved has tended to be overlooked. And even as regards hygiene and asepsis, are the good results commensurate with the provisions made and the precautions taken? Is it not the case that more cases "go septic" in maternity homes than in patients' own homes where the mother has gained a fair immunity to her local germs? Personally, I know I have been happier conducting a confinement and puerperium in the patient's home than in hospital or maternity home, in spite of the fuller provision of facilities and the smaller demand on one's time in the latter. Why? Because the *psychological* atmosphere is more normal, more friendly and easy, and much more stimulating. All of us were happier, I believe—patient, nurse, and doctor—and if that was the case, then it was surely happier and healthier for the newcomer as well.—I am, etc.,

Peppard, Oxon. LAURA HUTTON.

Civilian Mass Radiography

SIR,—I would like to compliment you on the critical but fair review in your leading article on civilian mass radiography (April 14, p. 521). It seems to me that the criticisms which you raised against civilian mass radiography in general do not apply to the Nottingham Corporation Mass Radiography Unit, as this unit is run on slightly different lines from those laid down by the Ministry of Health in the Advisory Report on Mass Radiography.

The City of Nottingham's unit has the Chest Radiography Centre as its home base. The ground floor at this centre is devoted entirely to mass radiography. This does not mean that the *x*-ray unit is completely static, because the unit is transportable and is taken to factories of sufficient size to justify this step. The first floor at the centre is equipped as a modern chest diagnostic out-patient clinic, and deals with the abnormal cases discovered by mass radiography. Equal attention is paid to all diseases of the chest, whether tuberculous, non-tuberculous, or cardiac. All abnormal cases are seen at this centre and are fully investigated here both clinically and bacteriologically, and those that require in-patient investigation are referred for admission to the sanatorium or general hospital, as the case may be.

I would like to draw attention particularly to the special out-patient clinic which is held at the centre for the symptomless minimal tuberculous cases. These cases are under the personal supervision of the medical director, and are referred to the tuberculosis officer only if the lesion should spread or there are definite indications for sanatorium treatment. In this way the symptomless minimal case is kept under the supervision of one observer and renders "follow-up" investigation an easy matter. Further, this method lends itself to the application of research work in these cases. I find from experience that the patients in this city are most co-operative; that many are willing to attend our chest radiography clinic, without being labelled tuberculous, who would refuse to attend the tuberculosis dispensary for this very same reason.

In Nottingham close co-operation exists between all the branches of chest work for the rapid disposal of those cases detected by mass radiography. It is useless detecting early cases of pulmonary tuberculosis unless something is done for them, and with a minimum of delay. As a rule cases referred from the mass radiography unit are seen by the tuberculosis officer at the dispensary within *one* week of their clinical examination at the Chest Radiography Centre. Early cases of pulmonary tuberculosis which need priority admission to sanatorium have been admitted to sanatorium within *two* weeks of their being seen by the tuberculosis officer. It is no exception for a patient to be admitted into the sanatorium within three to four weeks of the first clinical examination after mass radiography. Detection of early cases requires early disposal.

It is my intention, as medical director of the Chest Radiography Centre, to visit the sanatorium at regular intervals in order to "follow up" the cases diagnosed through our mass radiography unit. Already we have held such a session, which included the medical superintendent of the sanatorium, his assistant medical officer, and myself. Cases were fully discussed, with profitable results to all concerned. Only in this way can we hope to learn the most about these symptomless tuberculous lesions. The organization for the disposal and treatment of the non-tuberculous case is just as comprehensive.—I am, etc.,

Chest Radiography Centre, Nottingham. A. E. BEYNON, Medical Director and Physician.

Sulphonamides in Measles

SIR,—I was very interested in the observations recorded (April 21, p. 567) by Dr. J. Frankland West. He writes that he would be interested to know whether similar results have been experienced.

I have just experienced a similar successful result by treatment with sulphadiazine. This was given to a boy aged 5 years when I found him to have a temperature of 100.5° F., with no physical signs, and it was given in the hope that, should some serious condition develop that would later need such treatment, a good start would have already been made. I did not then have reason to suspect developing measles, which did come on after three days. The attack was surprisingly mild, with very slight cough and no inflammation or any soreness of the eyes; there was a very sparse rash, and the whole condition cleared up within 48 hours.

This child's sister, a year older, developed measles. She was first seen by me when the rash and other symptoms made the diagnosis obvious. At that time it did not occur to me that the chance giving of sulphadiazine to her brother had any beneficial effect on the attack of measles, and she was not given this drug; she had a most severe attack, with a higher temperature, very sore discharging eyes, a very profuse rash, and a marked lengthening of the attack.

More extensive statistics on the effect of this drug on measles would, I consider, be most useful.—I am, etc.,

London, N.W.1. M. D. RIPKA.

SIR,—I should like to testify to the highly beneficial effects of sulphathiazole in measles. In the recent epidemic, in which I saw some 106 cases, I gave it at first to the more severe cases, and its effect was so striking that I began giving it to nearly all cases, with equally almost astonishing results. The epidemic though heavy was only mild, in that spring measles is generally milder than the winter type.

I am convinced that, pneumonitis or no pneumonitis, sulphathiazole is also a "specific" for measles. The usual complications, particularly otitis media and pneumonia, thanks to sulphathiazole, worked out at less than 6% with no deaths, while the duration of the illness was curtailed by half. I wish to emphasize that, while the majority of cases were mild, there were many severe cases too.—I am, etc.,

Kennington. H. J. POWELL.

SIR,—I treated nearly all my cases during the recent epidemic with sulphanilamide and got excellent results. I gave sulphadiazine to one patient, whom I suspected was developing measles, merely because a friend who was with me (we were stopped on the road on Easter Monday while on our way to see a patient of my friend) had some sulphadiazine in his car. The child did develop measles, and I switched over to sulphanilamide with the usual good results. This may interest Dr. J. Frankland West, whose letter has prompted this.—I am, etc.,

London, W.11. RALPH JONES.

SIR,—Dr. Frankland West's experience with sulphadiazine in measles prompts me to send in mine. A couple of years back I had fourteen cases in a girls' residential school. It was a severe epidemic of measles, to judge only from the temperature, which ranged between 103.5° F. and 105° F. at the peak of the illness, and there were no complications, due undoubtedly to the same sulphadiazine. The ages of the patients were from 5 to 15; all of them were given 1 g. of the drug as an initial dose, followed by 0.5 g. four-hourly till the temperature was normal. In no case was treatment begun before the diagnosis of measles was established before the appearance of the rash. In every case except the 5-year-old patient the rash had faded and the temperature dropped to normal in 48 hours. In the only resistant case this took 96 hours. The patients, moreover, suffered little "illness" once under the influence of the drug, and returned to a normal diet more quickly; in fact their worst phase was while waiting for the rash to appear.

This does raise the question of the period of isolation in such cases, and also of the immunity they developed. There was no question of their well-being. A factor strongly brought out was the good effect on their skins. Those who had previously suffered from acne seemed to have procured a new skin!

A child of 6 months, seen last month with a temperature of 102° F., a persistent cough, and a rash, and also diagnosed as suffering from measles by another medical man, lost rash, temperature, and cough on 0.15 g. sulphaguanidine twice a day for a period of 3 days. This latter drug I have found extraordinarily effective in this dose 2-hourly for the influenza which seems to correspond clinically with the "genuine" disease and which responded poorly to both sulphathiazole and sulphamezathine.—I am, etc.,

Hereford. T. PIRES.

Sulphonamide Therapy in Otitis Media

SIR,—I have read with great interest as a country practitioner your correspondence on sulphonamide therapy in otitis media following the letter of Mr. A. R. Dingley (March 24, p. 422). Does he yet realize that the vast majority of cases we general practitioners see are at an early stage, which he, as a consultant, will rarely be called to see? I find that the pain is almost invariably relieved after the second dose of the drug, but the drum must be inspected frequently and carefully if the occasional case which proceeds to suppuration and requires timely paracentesis is to be detected. If this routine is carried out competently with an adequate auriscope, and some means of testing hearing, I regard the treatment as absolutely safe.

Parents are beginning to realize now that we can do more than give anodynes if called to treat their children in the early stages. Furthermore I find that if an attack can be aborted early there is no longer that increased liability to subsequent attacks in the presence of nasopharyngeal infection, which invariably follows a first attack when suppuration and discharge have taken place.—I am, etc.,

Bakewell. SINCLAIR M. EVANS.

"Predisposition" to War Neuroses

SIR,—Dr. Frederick Dillon in his letter (April 21, p. 570) says that in my article (March 31, p. 444) it is suggested that "predisposition to breakdown under war conditions can be correctly estimated from the occurrence of nervous and mental illness in the family and personal history of the patient and from a poor work record." I would not dare to suggest that it is possible to estimate *correctly* when a patient is likely to break down even under stress of war. Many patients fulfil these factors as to predisposition and are able to withstand the shocks and stresses of war. On the other hand, if these factors are to be ignored why do the great majority (I cannot give the exact figure) of the admissions to this neurosis centre satisfy these conditions?

Surely the control group can be supplied by those patients who are admitted to the surgical side and who show no evidence of neurosis and no predisposition in the form mentioned. Even some of those with *no* predisposition break down if the stresses are severe enough.

I agree with Dr. Dillon that a number of neurotics have made excellent soldiers, but these are the exception rather than the rule. I also agree that mildly obsessional persons often have excellent work records, but when they develop obsessional neuroses the work does suffer as a result. Abnormal personality traits alone of whatever type do not constitute predisposition, but when added to the other factors mentioned, surely the risks of a neurosis developing in such an individual are considerably increased when exposed to the stresses of war.—I am, etc.,

Sutton Emergency Hospital. LOUIS MINSKI.

Malaria in West Africa

SIR,—I was most interested in the article by Squad. Ldr. D. G. Ferriman on the diagnosis of malaria in West Africa (March 10, p. 328), and especially the section on subclinical malaria. This condition and that of clinical malaria—i.e., cases in which positive blood films are not found—are forming the majority of the cases seen out there to-day.

Although no reference is made to the period during which the data were obtained, it appears that it would be before 1944, because during that year the suppressive dosage of mepacrine was increased from 0.2 g. twice weekly to 0.1 g. daily. With this change of dosage there has been a very definite change in

the relative incidence of the three types—M.T. malaria, clinical malaria, and subclinical malaria—as reported in the article, and it is this fact that has led me to write this letter, which is not intended as a criticism of a very excellent article.

In the early period of 1944 I was fortunate enough to conduct an experiment with the increased suppression dose. The station was divided into two equal groups, each barrack block being divided equally, both numerically and, so far as possible, by trades, as night workers (e.g., wireless operators) were found to have a greater incidence than other trades. One half were then given the old dose of 0.2 g. mepacrine twice weekly, and the others were given 0.1 g. for six days a week. Unfortunately the experiment was terminated some two months later, before really reliable statistics could be obtained, by the introduction of a suppressive dose of 0.1 g. daily to all personnel, but there were definite indications that the increased dosage reduced both the primary and secondary attacks of malaria considerably. More marked, however, was the reduction in the number of positive slides obtained. These indications were more than confirmed with the introduction of the daily suppressive dose of 0.1 g. mepacrine. Positive blood films became much less frequent, and in fact furnished some indication of the state of antimalaria discipline on the station. If more than 50% of cases were found to have positive slides, it could be assumed that discipline was lax. I also found the examination of blood films of value in assessing whether or not a patient had been taking his suppressive mepacrine. In most positive slides parasites were relatively scanty, and the rings usually poor, woe-begotten affairs. If a textbook appearance was found it was almost certain that suppressive mepacrine was not being taken regularly, and in most cases a direct challenge to the patient would substantiate this fact. To obtain 90 positive slides out of 136 consecutive low-fever cases, as reported in the article, would be most exceptional to-day.

Regarding clinical features, temperatures of more than 102° F. are rarely seen in my experience. Splenomegaly was not found to be anything like as high as the 25% quoted in the article; it occurred in less than 10% of the cases I saw, but tenderness over the spleen and under the left costal margin was very frequent. The description of the anomalous behaviour of malaria resembling other diseases, and also that of subclinical malaria, was greatly appreciated, as these are the types of malaria most commonly presenting themselves to a Service medical officer. In this connexion I found that a careful history of the two days before reporting sick was of great value, especially in those cases where the temperature was between 99 and 100° F. In nearly all cases of clinical and subclinical malaria the following history could be obtained, in most cases without the use of leading questions.

There would be the development of lassitude, and a feeling of over-tiredness during the afternoon, and by evening there would be a definite anorexia associated with varying degrees of headache. Usually the headache was occipital and slight. This would be followed by a poor night's rest, but on rising the following morning the headache would have disappeared and the appetite returned; there would still be a disinclination for work. Work would be begun, however, and during the forenoon the headache would recur and increase in intensity throughout the afternoon. The anorexia would return, and if the man did not report sick at this time he would usually retire early without his evening meal. He would have a good night's sleep—often described as "a very heavy sleep"—but when he awoke the headache and anorexia would be marked, and he then usually reported to the medical officer. The remission of headache and anorexia on the first morning with a return of the symptoms later in the day was not found in cases of upper respiratory tract infections, between which and clinical malaria a differential diagnosis has most frequently to be made.

A good case history was found to be of increasing importance in the diagnosis of malaria as found in the Service to-day, as the classical signs and symptoms of high temperature, rigor, enlarged spleen, and positive blood films are rarely seen. It is more than likely that these will be even less often found with the introduction of this new scheme whereby all personnel shall have had 1.75 g. of mepacrine before landing in Africa, or shall be given additional doses of 5 gr. quinine daily until they have had this amount of mepacrine. I personally had had only 0.4 g. prior to landing and this appeared to be about the average amount of mepacrine taken before landing in 1943 and early 1944. As a result the malaria incidence was relatively high in personnel during the first two months on the coast, because there was not a sufficient concentration of mepacrine in the tissues to afford protection, and it was in these cases that I found the highest percentage of positive slides.—I am, etc.,

J. C. HUTCHINSON,
Flight Lieut., R.A.F.V.R.

Treatment of Cerebral Malaria

SIR,—In the *Journal* of April 21 (p. 560) the leading article on pathogenesis of cerebral malaria, and on page 567 the letter on adrenaline in the treatment of malaria by Lieut.-Col. D. C. Macdonald, claim attention. In spite of statements to the contrary, cerebral malaria is nearly always due to *Plasmodium falciparum* infections, neglected, unrecognized, masked, ineffectively treated, or misdiagnosed. Special strains of *Plasmodium falciparum* are particularly liable to produce this complication—e.g., the variety current in the region of Kermanshah. The absence of demonstrable malaria parasites in the peripheral blood not infrequently makes diagnosis a bit harder. Blood films of venous blood, or liver, spleen, or sternal puncture, are of value occasionally, but often are disappointing. The erythrocyte sedimentation rate can be helpful. Intravenous saline, which can be used as a vehicle for quinine bihydrochloride or for adrenaline, is usually a necessity: these drugs may be injected with a hypodermic needle into the rubber tubing of the saline infusion set. It is necessary to warn against the injection of quinine bihydrochloride solutions into the rubber tubing of a set giving citrated blood, since troublesome clotting will ensue. Even after intravenous quinine it is advisable to test for quinine any sample of urine that can be obtained.

Patients who remain obstinately unconscious after repeated intravenous injections of quinine are encountered from time to time among the cases brought in too late for effective therapy (as reported by Col. A. W. D. Leishman and Capt. A. R. Kelsall, *Lancet*, Aug. 19, 1944, p. 231) and confusion with the prolonged coma of hyperthermia is a possibility which nearly always has to be considered. The modern Army system of prophylaxis (one tablet of mepacrine a day) will prevent blackwater and cerebral malaria, not completely perhaps, but very nearly. Idiosyncrasy to this drug may be rare, but does occur. Prophylactic quinine may not be absorbed, and urine tests for quinine—or the mixture of methylene blue with the preparation used—are advisable. Inspection of the urine of a patient taking mepacrine or "blued" quinine is often enough, but is a wise precaution. In the "shock-like" condition of malarial coma, intravenous adrenaline may release adrenocortical hormones (Voge), perhaps an explanation of the undoubted benefit which follows.

Spleen contraction for convalescents taking anti-relapse courses may be encouraged by two-mile walks, cold baths, sunbathing, swimming, hill-climbing, aeroplane trips, and breathing carbon dioxide from a mask as well as by injections of adrenaline, effective as this procedure may be. The spleen is not the whole story: capillaries in other abdominal viscera, the lungs, muscles, glands, and skin all may harbour the parasites of relapse in closed sections opened by exercise, etc.—I am, etc.,

FRANK MARSH,
Pathologist, A.I.O.C.

Intestinal Obstruction by Gall-stones

SIR,—I have read the article by Mr. Maurice Lee on intestinal obstruction by gall-stones (April 21, p. 555) with interest, because in December, 1944, within a few days of each other I encountered and operated upon two cases which occurred in my own general practice. Both cases were in elderly females. Case 1 was a typical case of acute intestinal obstruction. The gall-stone was lodged near the end of the ileum. Case 2 was unusual. The patient was fat and florid and suffered from myocardial degeneration, and as a result of clinical and radiological investigation I diagnosed a probable "ring" stricture in the pelvic colon. With the intention of performing a colostomy I opened the abdomen through a left grid-iron incision, and was agreeably surprised to find a large gall-stone (rather less than the size of a golf-ball) lodged at the pelvi-rectal junction and easily "milked" upwards into the pelvic colon and

removed through an incision in the bowel wall. The patient made a good recovery and returned home much improved by her enforced rest and reduced diet.—I am, etc.,

Dunfermline. A. CAMPBELL MACEWEN.

Gonorrhoeal Arthritis

SIR,—In September, 1935, while in India, I published in the *Lancet* the results of my work on fresh and chronic cases of gonorrhoea treated by pyretotherapy, using T.A.B. vaccine. I have since mentioned those findings in the *Journal* of Oct. 21, 1944.

I should now be glad if you would afford me space to publish the results of a chronic case of gonorrhoeal arthritis of two years' duration, in which the patient had persistent pain and could not move without a stick but is now able to do so without any pain after a period of treatment of only a fortnight. In this case I used a *B. coli* vaccine.

History.—Fresh infection 1927. Treated at a V.D. clinic for six months, then discharged as cured. In March, 1943, suddenly developed arthritis in both ankles, which became very tender, painful, and swollen. Was in bed for 5 weeks and has had to use a stick since. He is still attending a V.D. clinic. Since that time he has developed pain and stiffness in both shoulders and in the spine. His feet are flat, his toes over-ride each other in their deformity. This man was once an athlete and runner, with well-formed feet.

Present Condition.—He is unable to walk without a stick. Severe pain on movement in both ankles. Flat-footed and toes pointing laterally and over-riding each other. Pain and stiffness in shoulders, and similarly in spine, dorsal and lumbar regions. He is unable to bend down and pick up objects from the floor without going down on his haunches. Knees slightly swollen and painful.

Treatment began on *April 4, 1945, 1st injection.* 50 million organisms per c.cm. given intravenously. Within two hours he developed a rigor, felt cold, then hot, and within four hours his temperature rose to 103° F. Later he sweated profusely, and by next morning he had a normal temperature. He stated his pains felt easier.

April 6, 2nd injection. 100 million organisms in 1 c.cm. intravenously. Similar type of reaction. Temperature, 104°. Normal next morning. Pains only slight on movement.

April 8, 3rd injection. 200 million organisms in 1 c.cm. Similar reaction. Temperature, 105°; normal next day. Only slight pain in the left ankle on movement; none in right. Stated the left was always the worse of the two. Shoulders and back were free from pain and stiffness. Slight headache next morning. States he feels very fit and better than he has been for a long time—ever since he was crippled.

April 10, 4th injection. 400 million organisms in 1 c.cm. Similar reaction and temperature. No pains felt in ankles on active or passive movements. Able to bend down and pick up objects from the floor, and able to walk without the aid of a stick. Very slight pain in left ankle.

April 12, 5th injection. 1,000 million organisms in 1 c.cm. Severe reaction and headache persisted next morning. No pains felt in knees, ankles, shoulders, or spine. No pain in ankles on walking. Crêpe bandages applied during the day.

April 14, 6th injection. 2,000 million organisms in 1 c.cm. Very severe reaction, and persistent headache next morning. No pains whatever in any joints. All stiffness of shoulders and back gone. States he feels like a new man. Has lost the drawn and haggared look that comes with persistent pain over a long period. Advised to use elastic ankle socks or crêpe bandages, and to "go easy" for a while. Also advised to use his stick when walking any distance. No swelling of knees.

April 18, 1945. Came to see me to-day, looking very happy and contented. Said he had walked two miles to-day, and felt none the worse.

In view of the long period of pain with its crippling effect and the rapidity with which this was relieved, the case is considered of special interest, with the hope that similar cases may be given the opportunity of this treatment, which can be carried out at the patient's home or in a hospital. The patient's gratitude and buoyancy on being relieved of his agonies are a reward.—I am, etc.,

London, S.W.16. A. H. BARTLEY.

Inguinal Hernia

SIR,—The *Journal* of March 3 containing Mr. Percival Cole's article (p. 296) on inguinal hernia in the Merchant Navy has just reached me. I would like to offer, unfortunately belated, comment.

Mr. Coles appears to advocate a return to the generally discarded filigree operation as an alternative to other forms of herniorrhaphy. The arguments are based on these figures: 4 recurrences out of 130 filigree operations (3%) and 12 "met with" out of another series of 448 filigree operations (2.8%), which are compared with a recurrence rate of over 12% as representative of British surgery as a whole. The figure of 12% is probably a fair one and substantiated by a series of cases carefully followed up, such as that of Max Page and McPherson on policemen operated upon at St. Thomas's Hospital.

I would submit that the comparison is an unsound one on two grounds: (1) Institutional figures for a large number of surgeons are not comparable with those of an individual. The latter, if sufficiently enthusiastic to publish his results, is probably a virtuoso in his technique and unrepresentative of the "average" surgeon. (2) There is no mention of a systematic follow-up in which a number of patients were traced and examined at a definite interval after operation. Only recurrences "met with" are mentioned. It seems unlikely that anything like an adequate "follow-up" could have been exercised on clinical material consisting of men in such a nomadic and hazardous occupation. Even under optimum conditions the failures, the dissatisfied patients, are always the harder to trace. The more complete a follow-up and the nearer to 100% it becomes the more difficult it is to trace defaulters and the more sharply rises the recurrence rate.

Mr. Coles's conclusion that "the figures cited clearly suggest that the recurrence rate attached to this operation is remarkably low" appears unsubstantiated and does not show that a return to the filigree operation is the answer to this still unsolved problem.—I am, etc.,

Takoradi. J. B. KINMONTH,
Squad. Ldr., R.A.F.V.R.; Surgical Specialist.

Intravenous Pentothal in Placenta Praevia

SIR,—I note that Prof. S. J. Cameron (April 14, p. 532) places intravenous pentothal first on his list of suitable anaesthetics "in cases of placenta praevia where the patient's condition is critical." This is very interesting in view of the fact that most surgeons and anaesthetists have come to the conclusion that pentothal is a dangerous anaesthetic for severely shocked cases unless given very carefully by an experienced anaesthetist. This conclusion has been completely confirmed by those engaged in the treatment of war casualties, and especially by the Pearl Harbour "pentothal disaster."

If pentothal has any real advantages in Prof. Cameron's cases may I suggest that they are as follows: (1) The quick induction given by pentothal gets the patient ready for the surgeon in a shorter time, when relaxation of the abdominal muscles is not required, than can be obtained with any other anaesthetic. This time factor may be of great importance when the haemorrhage can be stopped only by surgical intervention. (2) When anaesthetizing badly shocked cases with pentothal it is usual to administer pure oxygen throughout the operation. This would obviously be of benefit to such exsanguinated cases as women who have suffered severe bleeding from a placenta praevia.

Finally, I should like to point out that most anaesthetists believe that, chloroform apart, safety lies in the skill of the administrator rather than in the agent.—I am, etc.,

Harrogate. JAMES CAMPBELL.

Immunization against Tuberculosis

SIR,—I wish to draw attention to a matter that should be of the utmost interest to the Medical Research Council.

So far as is known it seems that any attack of an infectious disease is followed by either death or recovery. When recovery takes place, antibodies can be demonstrated in the blood. This fact has been taken advantage of in various ways—for example, animals can be infected with certain germs and made to produce antibodies in their blood. These antibodies have been used in the treatment of the particular disease in a human being. Bacterial poisons or even bacteria themselves having had their virulence demonstrated have been injected into human beings and thus produced immunity to the disease in question.

Why cannot we do this in the case of tuberculosis? Why is tuberculosis an exception to the rules governing all other infections? This is probably the most important question before modern medicine in this country. The amount of suffer-

ing and the economic loss due to tuberculosis in any one year are enormous. It seems to me essential that work should be started on the question of immunity to tuberculosis. Very little has been done in this country or indeed anywhere else on the subject, yet the problem cannot be insoluble; it only requires sufficient work to elucidate it. Think what it would mean if tuberculosis could be prevented as easily as, say, diphtheria. But for some reason the profession all over the world seems to have accepted the position that tuberculosis is unique, and is content to spend its energies in repairing its ravages rather than in scientific, biological prevention.

I feel that this is a subject eminently demanding the attention of the Medical Research Council, and although the problem may seem insoluble, I am convinced that it is not so, and I can conceive of no greater benefit which the medical profession could confer on mankind than that it should succeed in solving it.—I am, etc.,

Crowthorne, Berks. SYDNEY GORDON TIPPETT.

⁂ A leading article in the *Journal* for Dec. 4, 1943 (p. 716), reviewed the history and progress of immunization against tuberculosis in man and animals.—ED., *B.M.J.*

Artificial Respiration

SIR,—Many articles on artificial respiration have appeared from time to time in British medical journals recently, concerned chiefly with the relative merits of the well-established manual method of Schäfer and a comparatively new mechanical method introduced by Eve.

Considerable research in this subject was conducted some years ago in the department of physiology, University of Toronto, under the late Prof. J. J. R. Macleod, by Urquhart and Noble,[1 2] and for the Hydro-electric Power Commission, Province of Ontario, by Mr. Wills Maclachlan.[3 4] A definite relationship between the application of artificial respiration in cases of asphyxia and ultimate recovery was established, the essence of which was *time*. This relationship was so striking that it formed the basis of all instruction in artificial respiration in hydro-electric first-aid crews, life-saving societies, Red Cross and St. John Ambulance Brigade units, etc.; this consisted of the application *on the spot, with a minimum of time loss, of some form of manual artificial respiration*, the optimum of which was considered to be Schäfer's. All teaching was directed towards dispelling from the mind of laymen the illusion that any machine, such as a pulmotor (or now a "rocker"), was a panacea for which one only had to wait, usually beyond the time interval in which life may be restored, and all would be well, and to establish firmly in their minds that any person by his own efforts is capable of performing artificial respiration, the success of which depends entirely on its immediate application.

It cannot be too strongly stressed that the introduction of any new mechanical method, irrespective of its merits, tends to create in the public mind a dangerous impression and one which would appear to have been entirely disregarded in recent communications. The interval that must of necessity elapse before the commencement of any mechanical device may jeopardize the life of the victim. Once the critical interval has been exceeded (and this has been determined experimentally on animals and by case reports of human beings: *J. industr. Hyg.*, 1928, **10**, 117) it should be superfluous here to point out that no method whatsoever can be successful.

Certain statements in the letter by Eve (April 7, p. 495), such as "there are many instances of failure of the Schäfer method," and "it fails much oftener than it succeeds," are, in my experience and that of competent authorities, entirely without foundation and actually misleading. One cannot deny that there are failures, but failure should only be encountered when the victim is already dead or moribund and where artificial respiration by any means has not been instituted within the critical time interval (up to six minutes, depending upon the patient's condition and other circumstances).

Eve refers to the toneless diaphragm, which so far, it is admitted, has not been demonstrable radiologically but which is assumed by analogy to exist. It would be of interest to obtain the experimental evidence upon which this assumption is based. He states further that in the rocking method the weight of the abdominal contents pushes and pulls the diaphragm up and down like a piston. He assumes that all air intake into the lungs is governed by the rise and fall of the diaphragm; presumably the expansion and contraction of the chest wall has no effect. He ignores entirely that in Schäfer's method, when the pressure is properly applied over the lower ribs, the thoracic cage is compressed and at the same time the visceral contents press upwards against the diaphragm and venous blood from the splanchnic reservoir is returned to the heart. To state that when the pressure is released these contents remain pressed up into the thoracic cage behind a toneless diaphragm is as ridiculous as it is physiologically unsound.

In all fairness, one must admit that the rocking method may contribute something toward a return blood flow to the heart and lungs, but unless adequate circulation is still being maintained any method is predestined to failure.

No evidence has been adduced so far to warrant altering the teaching of Schäfer's method as the most satisfactory method of artificial respiration.—I am, etc.,

E. CLARK NOBLE.

REFERENCES

1 Urquhart, R. W. I., "Experimental Electric Shock," *J. industr. Hyg.*, 1927, **9**, 140.
2 —— and Noble, E. C., "Experimental Electric Shock," II, ibid., 1929, **11**, 154.
3 Maclachlan, Wills, "Electric Shock": Interpretation of Field Notes, ibid., 1930, **12**, 291.
4 —— "Electrical Injuries": Interpretation of Field Notes, II, ibid., 1934, **16**, 52.

Smallpox Vaccination: Multiple-pressure Method

SIR,—I read with much interest and approval the account of smallpox vaccination by the multiple-pressure method given by Dr. H. J. Parish (Dec. 16, 1944, p. 781). He states, however, that this method has never been adopted in England. This way of performing vaccination was taught to me during my course for the Diploma in Tropical Medicine in 1936 at the London School of Tropical Medicine and Hygiene, and I have used it ever since with most satisfactory results. Unfortunately I cannot remember which member of the staff at the school demonstrated the method, but I feel it should be known that it was being taught there over eight years ago.—I am, etc.,

J. F. JARVIS,
Medical Officer, Colonial Medical Service,
Morogoro. Tanganyika Territory.

Shall We Nationalize Medicine?

SIR,—Lord Horder's suggestion (April 7, p. 497) of sabotage in connexion with the movement in which Prof. Ryle is interested, and, secondly, his suggestion of Prof. Ryle's doubtful ability to stand firmly on what he believes to be a sound principle, are not complimentary to those of us who agree with Prof. Ryle.

As Lord Horder knows, the medical student hitherto has been taught in the most dogmatic manner to be conservative, and any attempt to put forward any new idea is followed by a shout of "heterodoxy" and a refusal to face facts. The great improvements in medical work are all intimately associated with improvements in the social life of the whole community, and unless medical men are prepared to fall into step with that progress there will inevitably be trouble. As medical men in a country interested in the conditions of India we are made to realize the seriously unhealthy conditions under which the huge population of India is existing, not living, and no improvement in medical work can be hoped for unless there is a complete revolution in regard to the vested interests—such as those of landlords, priests, and financiers—together with a complete rearrangement of medical services. The two rise or fall together, Lord Horder notwithstanding.

Medical men who do their work properly are entitled to adequate remuneration, but unless incomes are so stabilized as to remove anxiety by removal of insane professional competition, we cannot hope that the work will be done as it ought to be done.—I am, etc.,

Swansea. G. ARBOUR STEPHENS.

Prophylaxis of Dysentery

SIR,—A brief note on the use of sulphonamides in preventing the incidence and spread of dysentery in a small community may be of general interest. It is based on the experience of the last 17 years in a mental hospital, and all cases referred to were proved positive bacteriologically.

During the first four years of this period, an average of five new cases of Flexner dysentery occurred each year. Thereafter, in spite of all that could be done by way of cleanliness, isolation, decontamination, and treatment by inoculation, the number of cases continued to increase until the peak year of 1941, during which 52 cases occurred. Various sources of infection were considered and sought for, but by this time I was convinced that the disease was being kept alive and was being spread from patient to patient in the wards by "carriers" of the disease; for though new carriers were constantly being discovered there must always have been a number who were not known. Also, I had by now reluctantly come to the conclusion that dysentery was endemic in the hospital. I admit that this was a confession of failure and almost of despair.

During 1942 sulphaguanidine came into use in the hospital in the treatment of dysentery, and immediately a striking improvement occurred. During that year there were 39 fresh cases, but of these no fewer than 37 occurred *before* July, when treatment was begun, and only 2 occurred thereafter, and, what is more, these 2 are the last on record.

During 1943 it occurred to me to use sulphaguanidine prophylactically, and it was given twice in the year to every patient in the hospital and to all members of the nursing staff who were willing to take it. It was also given to all new patients on admission as a routine procedure. During 1944 the whole hospital was again treated, ward by ward, twice at six-monthly intervals, although there had been no fresh cases. The result is that there has been not a single case of Flexner dysentery in the hospital for more than two years.

Recently an epidemic of Sonne dysentery occurred. It broke out simultaneously in three widely separated parts of the hospital, indicating some common source of infection. A member of the kitchen staff, who lives outside the hospital, came under grave suspicion of having introduced it, but it could not be proved. This epidemic covered a period of twenty-one days, during which the stools of 63 persons reported as passing loose motions were examined. Of these, 30 were proved positive bacteriologically. Every patient suffering from the disease was immediately treated with succinyl sulphathiazole, which is more effective than sulphaguanidine for Sonne dysentery; but it took a week to carry out prophylactic treatment of over a thousand mental patients ward by ward. After this treatment only two fresh cases occurred out of this large number protected, and the two wards concerned were treated again. Since then there has been no fresh case of dysentery and all loose motions have ceased.

To summarize, I think it can be reasonably claimed that Flexner dysentery has been stamped out and that an epidemic of Sonne dysentery severe enough to cause at least 30 cases of infection in 3 weeks and which threatened to spread like wild-fire was cut short very quickly. It only remains to protect the hospital from reinfection by the routine administration of sulphonamides to all patients on admission and the old-fashioned "asylum dysentery" will disappear.—I am, etc.,

Herrison, Dorchester. P. W. BEDFORD.

The National Loaf

SIR,—*Humphrey Clinker*, Smollett's last novel, published in 1771, contains the following remarks (Everyman's Library, 1943, p. 114):

"The bread I eat in London is a deleterious paste, mixed up with chalk, alum, and bone-ashes; insipid to the taste and destructive to the constitution. The good people are not ignorant of this adulteration; but they prefer it to wholesome bread, because it is whiter than the meal of corn: thus they sacrifice their taste and their health, and the lives of their tender infants, to a most absurd gratification of a mis-judging eye; and the miller, or the baker, is obliged to poison them and their families in order to live by his profession."

—I am, etc.,

London, E.3. ELI DAVIS.

Flour in the Loaf

SIR,—Having read Sir Ernest Graham-Little's letter (April 14, p. 530), I think your readers should be correctly informed on the technical points mentioned. I refer to his statement that home-grown wheat is the only source of wheat germ, since, he says, the germ is removed from imported wheat in the country of its origin. The main argument of the letter is indeed based on this supposition.

As one who analyses practically every boat-load of wheat arriving in this country, I must point out that the statement made in Sir Ernest Graham-Little's letter is completely incorrect. The germ is not removed in the country of origin but arrives here as a constituent part of whole wheat.

Secondly, Dr. Frewen Moor (p. 531) asks what goods are made from flour in the milling of which it is permissible to extract germ—i.e., flour destined for manufacturing purposes. Such flour (known officially as "M" flour) is mainly used for self-raising flour or for making biscuits and confectionery goods. These goods are usually more alkaline than yeast-made bread, and in consequence of the *p*H being 7.0 or over the B_1 present is largely destroyed in the baking process. Hence the decision of the Ministry of Food to allow germ to be extracted in such cases, which represent only a small percentage of the total flour used.—I am, etc.,

Ealing, W.5. D. W. KENT-JONES.

SIR,—Some of us are not quite clear on this problem of flour and "extraction." It is a very important one indeed; can you not give us some unprejudiced information?

The term "extraction" is very popular; but is it correct? An 80% extraction means that 20% is taken out—*ex tractum*. What is implicated in altering the extraction from, say, 80 to 85%? If 5% more is left in, what is it—flour, bran, or what?

It is not clear why anything need be taken out, except to make extra profit on the bran, etc. But it is far less clear why millers should receive a special payment for doing so, for those who sell genuine wholemeal bread do not get the subsidy. One reason given for "extraction" being necessary is that the use of rollers requires it; but why not use a more modern and cheaper way of grinding, as by disintegrators?

Few statements take into account the proportion of flour which is imported as such, or the bran or vitamins that remain in the country of origin. Can we get data on this—the proportion of flour imported against what is grown here?

As one letter points out, it would be interesting to know for what purposes wheat is "destined" other than for human food. If for biscuits chiefly, then, surely, whatever arguments there are for leaving vitamins in bread hold more strongly for biscuits, for they are not raised to so high a temperature nor kept there so long. Also, they are much used by the working classes.

Incidentally, this problem illustrates how impossible it is to separate medicine from politics, unless one separates all that has to do with the health of the public from medicine; though so many other instances make it equally obvious, as tuberculosis, about which so many questions are asked in Parliament.—I am, etc.,

Kingston-on-Thames. W. F. COOPER.

SIR,—Lord Portsmouth stated in the House of Lords (*Hansard*, Feb. 28, 1945) that "Bemax is very largely the result of removing the most valuable constituents from the wheat berry before it is made into white bread." As a plain matter of fact this statement is incorrect.

Sir Ernest Graham-Little (April 14, p. 530) cites in defence of Lord Portsmouth only one real piece of evidence—namely, the answer given to him in the House of Commons on Sept. 8, 1942, to the effect that 99% of the germ "not retained in flour" (the quotation is verbatim from *Hansard*) was allocated for the use of proprietary products, either foods or medicines.

He overlooks the fact that just one month earlier Mr. Mabane, speaking on behalf of the Minister of Food, had informed him that "no flour from which a proportion of the germ has been extracted is sold for any other than manufacturing purposes" (*Hansard*, Aug. 6, 1942). Nor was this an isolated reply. Similar information, variously phrased, was conveyed to Sir Ernest Graham-Little on June 9, June 30, July 16, July 23, 1942, and again in September, 1943.

It is quite clear that both Sir Ernest Graham-Little and Lord Portsmouth have fallen into the error of regarding Bemax as something abstracted from bread, whereas the truth is that the materials abstracted from bread—or flour used for bread-

making—are used exclusively for stock-feeding purposes and are permitted to be used for no other purpose.

It is thus clear that my assertion that not one flake or particle of Bemax is derived from flour either intended to be or actually used for bread-making is supported in the plainest and most unequivocal terms by the official record of the Proceedings of Parliament. It is also clear that the supply of raw materials for Bemax would be completely unaffected even if the rate of extraction were 100%. Suggestions to the contrary are inaccurate and merely confuse the main issue.

My comment on Dr. Frewen Moor's letter (p. 531) is brief. When Dr. Moor consults S.R.&O. No. 11 of 1943, to which I referred (now embodied in S.R.&O. No. 1, 1945, which I am sending him direct) he will find the information he seeks and will regret his accusation against me of contributing a half-truth to your pages.—I am, etc.,

H. C. H. GRAVES,
Chairman and Managing Director, Vitamins Limited.

Hammersmith, W.6.

U.C.H. and Sir William Gowers

SIR,—I have read with the greatest interest your leading article on Sir William Gowers (March 31, p. 452), and I appreciate every word of it, being one of the few survivors of a rapidly disappearing generation of University College men who still have a vivid recollection of Gowers, of his marvellous diagnostic skill, and the wide scope of his knowledge not only of the nervous system but of every branch of medicine, and of the manner in which he conveyed that knowledge to the students.

I entered University College in 1880 after having passed the preliminary scientific examination at the same time as Rose Bradford, Bayliss, and Raymond Johnson, who were all friends of mine. At that time University College had a very remarkable teaching staff, particularly the younger members, such as Marcus Beck and Godlee on the surgical side, and Victor Horsley, who rapidly established a world-wide reputation in surgery of the brain and spinal cord, and for research work on cerebral physiology, in some of which I was able to assist. Other outstanding men on the staff were Sydney Ringer, the physician, who was the greatest authority at that time on therapeutics, and known also for his research work on the influence of saline fluids on the development of tadpoles and the maintenance of regular pulsation of the excised heart of a frog for many months. (Of course Ringer's fluid is still as useful as ever.) There were also the physiologists, Burdon Sanderson, Sharpey-Schafer, and Ray Lankester, at that time the greatest living authority on comparative anatomy, who afterwards migrated to Oxford as professor.

Lister, the founder of antiseptic surgery, started his professional career at University College a good many years before then, but if it had not been for the conservative obstinacy of some of the older members of the staff would have developed his antiseptic system at U.C.H. instead of at Glasgow and Edinburgh. Lister's work was accepted with enthusiasm on the Continent of Europe, but in London, at the time my hospital training began, antiseptic surgery existed in only two hospitals—University College and King's. Sir Joseph Lister had come to King's College with his former house-surgeon, Watson Cheyne, and visited U.C.H. on several occasions and gave us lectures and demonstrations, which we greatly appreciated. U.C.H. was *facile princeps* of all the teaching hospitals in England, and the great majority of the honours and distinctions in the medical examinations of London University were won by its students.

Among the members of a brilliant staff Gowers was outstanding in versatility and diagnostic skill in all branches of clinical medicine. His clinical lectures were profoundly interesting and original, and not only in the physiology of the nervous system, in which he was pre-eminent. He had a pungent humour, which was greatly appreciated by his audience. One of the best instances of his outstanding diagnostic skill, one which had, I feel sure, never been equalled before and of which Gowers himself was justifiably very proud, was as follows. The son of the chief hall porter at the hospital was seriously ill with paralytic symptoms, the details of which, if I ever knew them, I have forgotten. This was in 1881, when I was house-physician to Sydney Ringer, and I have a vivid recollection of the case, for I had the privilege of giving the anaesthetic (chloroform). Gowers's diagnosis was an abscess in the temporo-sphenoidal lobe of, I think, the left cerebral hemisphere. Gowers diagnosed its exact location, and pointed out to the surgeon—Rickman Godlee—the exact spot in which to introduce a trocar; as the stylet was withdrawn, pus was evacuated, and a small drainage tube was introduced. The patient made a rapid and complete recovery.—I am, etc,

HERBERT H. BROWN.

Worthing.

Understating the Case

SIR,—The *Journal* of Feb. 10 has just reached me here and I have been interested to read the short symposium on Russian war surgery and your own editorial on that subject. While I consider it only right and proper that we should be able to read, in our journals, something of how our Russian colleagues are tackling the same problems of military surgery, I yet feel that you too, Sir, have fallen prey to what is a ubiquitous tendency in the popular lay press—the tendency to overrate all Russian results just *because* they are Russian, while at the same time neglecting to notice the even greater achievements of our own nation. It is a tendency not restricted to Russian affairs, but applies also to those of our other great ally. As a race we have a genius for understatement, perhaps especially when our own talents are the subject. This may have deceived Herr Ribbentrop, but it also gives our closest friends cause for surprise when they have occasion to see of what we are really capable.

To have staffed the medical services of a Force of the size of the Red Army 30 years after having had only 13 medical schools is certainly no small feat, but, bearing in mind the relative size of our own country, is no greater than what we have done. It is not only in the U.S.S.R. that "specialist treatment is provided . . . in forward zones," nor that "within a few miles of the front line there is segregation of cerebral, facio-maxillary, thoracic, and orthopaedic cases." And yet the editor of that daily paper which delights in regaling its Saturday morning readers with extracts from the latest *British Medical Journal* might have been forgiven if, after reading your leading article, he had penned a demand for mobile neurosurgical units in the British Army! I am not suggesting that you should cater for such a reader, but even a British civilian doctor might have wondered whether, perhaps, the Russians had "got something there." The Russian medical services have never had to evacuate, on D-day itself, casualties from a huge assault force across the English Channel, nor did our medical services break down during the dash across Belgium. I have not seen any Russian surgery, but experience in both European theatres has shown me no results that I have felt could be improved upon by either the Russian or American Army Medical Corps. This we have done using only the advice and suggestions of our consulting surgeons without any recourse to "central dictation of technique. . . ." Indeed, there is a friendly rivalry in surgical results between, for instance, B.L.A. and C.M.F., and it is difficult to imagine a British surgeon applying skeletal traction to a humerus merely because he was ordered to do so from London.

I hope I shall not be thought to be "making a mountain out of a molehill" and occupying valuable printing space, but I should not like to see our *Journal* taking the all-too-popular line of writing up the occasionally more spectacular work of others at the expense of our own, sometimes less colourful, achievements.—I am, etc.,

DONALD V. BATEMAN,
Capt., R.A.M.C.

C.M.F.

Histological Specimens Wanted

SIR,—Two months ago this medical school suffered severe damage. Among other very serious losses almost the entire stock of histological material, both blocks and pots of specimens, has been destroyed. We should be most grateful for any human material suitable for the second M.B., B.S. histology course. The material, as fresh as possible, should be put into 7% formol-saline. We will gladly refund any expenses incurred and also return receptacles: we can collect material in London on receipt of a postcard sent to me at the London (Royal Free Hospital) School of Medicine for Women, 8, Hunter Street, W.C.1.—I am, etc.,

EVELYN E. HEWER.

Final M.B. of London University

SIR,—As a member of H.M. Forces I would like to contribute an opinion, not yet voiced, on the new London M.B. regulation. I suspect and hope that the reason the new regulation applies to those beginning finals is that in further carving up the examination the standard of the whole will fall unless the pass mark of each part is correspondingly raised.

For the many in the Forces and elsewhere who struggled with this respected monster in its old form, of which I am one, many more than of the kin of Surg. Lieut. Trevor Davies (April 21, p. 571), it would be unfair if in its now more segmented form the M.B. should fall in standard.—I am, etc.,

JOHN C. L. ADAMS,
Surg. Lieut., R.N.V.R.

Revised Syllabuses of the General Nursing Council

SIR,—I think many must have read with considerable apprehension the revised syllabuses for both the preliminary and final State examinations, especially as on the front page appears the statement "As Approved by the General Nursing Council for England and Wales." I can hardly believe that they are approved by either the medical and nursing professions or the hospitals who will have to administer them.

In my opinion many of the subjects have nothing whatever to do with the training of a practical nurse; for instance, on page 7 of the subjects for the final State examination appears a paragraph, "Structural defects of houses unfavourable to good domestic management." It would be interesting to know exactly what this means. In both syllabuses appears the word "lighting," but nowhere has any provision been made for some instruction in electricity. Although many and varied electrical appliances are used in hospitals, few, if any, student nurses know the difference between alternating and direct current, why an earth is necessary, the meaning of voltage, nor, as a rule, is any instruction given in the proper use of electrical heating pads, surgical diathermy machines, electric cradles, etc. Surely some simple instruction could be given on these matters, and on the simple precautions which must be taken when using electrical appliances. Unfortunately, there have of late been several accidents in hospitals caused entirely by this lack of knowledge.

In conclusion, I feel that the time has now come when a firm stand should be made against the arbitrary manner in which the General Nursing Council treats both the nursing profession and the hospitals. Almost daily in the press there are paragraphs complaining of the shortage of nurses, but instead of making matters easier the General Nursing Council seems intent on making it more difficult for a girl to train as a nurse.—I am, etc.,

Royal Hospital, Richmond, Surrey. AUCKLAND.

The Services

Capts. J. P. J. Burns, W. F. Caldwell, J. B. Jayne, J. W. L. Kemp, and L. M. Reid, R.A.M.C., and Capt. C. L. Kashyap, I.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in Italy.

The following appointments, awards, and mentions have been announced in recognition of gallant and distinguished services in Burma:

M.B.E. (Military Division).—Major (Temp.) J. J. Elbert and Capt. M. M. Campbell, R.A.M.C.

M.C.—Capts. J. S. I'A. Chesshire, R. A. B. Kinloch (attached Indian Army), O. P. Llewellyn, and T. C. Thorne, R.A.M.C.; Capt. G. V. Faulkner, I.M.S.

Mentioned in Dispatches.—Major P. Baker; Majors (Temp.) G. A. S. Akeroyd, J. Donaldson, J. W. N. Duerden, C. R. Houghton, M.B.E., and J. S. McCrae; Capts. O. C. Colt, D. W. Evans, P. Firstenberg, H. A. Gibb, L. C. L. Gonet, E. J. Harrison, D. C. Langwell, F. Luckett, J. R. McGregor, P. M. M. Pritchard, T. B. L. Roberts (attached 9th Gurka Rifles), and J. R. D. Williams; Capt. (Temp.) T. A. Taylor, R.A.M.C. Major (Temp.) E. A. Tarleton and Capt. K. L. Chitwal, I.M.S. Capt. E. P. O'Neill, I.A.M.C.

Obituary

GILBERT ORME, M.B.

The death of Dr. Gilbert Edward Orme on April removes one of the best known as well as one of the mo popular and best beloved of West End London practitione —one who had more friends and fewer enemies than almo any man in the medical profession. Educated at Caius Colleg Cambridge, and St. George's Hospital, he became M.R.C.S. L.R.C.P. in 1899 and M.B. in 1901; at both places he wa prominent as an oarsman and a footballer, and rowed in many winning crews in first-class company. After house appoint ments at his own hospital and at the Victoria Hospital for Children, he went into practice for some years at Clitheroe in Lancashire, and was president of the Lancs and Cheshire Branch of the B.M.A. After moving to London a good many years ago he occupied a similar position in the Westminster and Holborn Division, and in addition did good service a member of council of the King's Hospital Fund, the Queen's Institute for District Nursing, the League of Mercy, and on the Interdepartmental Committee on Nursing Services. Gilbert Orme, who was born and brought up in Australia, was a man of fine physique, courteous manners, pleasing voice, and good address generally; his success in London practice was as assured as it had been in Lancashire, for in addition to these advantages he had also a thorough knowledge of his profession and a conscientious sense of duty. He travelled to Melbourne with the B.M.A. party for the Annual Meeting there in 1935, and as usual, made firm friends of all who were privileged to meet him.

Dr. ANDREW J. SHINNIE, medical officer of health, City of Westminster, and Dr. J. A. STRUTHERS, medical officer of health Borough of Holborn, send the following appreciation:

We feel we should like to pay a special tribute to the late Dr. Gilbert Orme. Shortly before the war, as the recently elected chairman of the Westminster and Holborn Division it naturally fell to him to be appointed to the chair of the Local Medical War Committee. We are not likely to forget the immense amount of work put in by him and the hon. secretary, Dr. Wood Smith (later Dr. Maxwell Chance) in compiling a census of the practitioners in the Division. The needs of the war had to be assessed and likewise the claims of practice, while the selection and nomination of those best fitted for the work then looming ahead proceeded. This process might well have been fraught with some heartburning had it not been pursued with so much good will and understanding. As a result when war came all the medical staffing for Civil Defence services which came under our control was complete and ready for action.

Many problems of varying magnitude came before the local committee. Still many more were dealt with by him by that sure conciliatory touch which made contending parties feel they had had a square deal. He was unsparing of himself in visiting by day and by night depots and posts in the area where he himself was a part time volunteer and played an active part in dealing with casualties. When the medical service in public air-raid shelters was instituted his advice again proved invaluable, and he himself shared in the service. It is no exaggeration to say that largely by his efforts a sense of common responsibility and co-operation between the doctors practising in the Division and the health services of the two local authorities has been fostered which it is hoped will grow and prosper to the future benefit of all concerned. Tolerance and good temper always characterized his conduct in the chair, and we shall miss his genial and urbane presence. There is no doubt that he spent himself in war service and denied himself the leisure to which a long and honourable career in medical practice had fully entitled him.

R. LAWFORD KNAGGS, M.CH., F.R.C.S.

Mr. Robert Lawford Knaggs, who died in retirement at Ford Park, Newton Abbot, Devon, on April 16, was one of the best known surgeons in Leeds until he left that city about 25 years ago. He was consulting surgeon to the General Infirmary and from 1910 to 1919 professor of surgery in the University of Leeds.

He began the study of medicine at Cambridge and continued it at Guy's Hospital, qualifying in 1883, and taking the F.R.C.S. a year later. At Cambridge he graduated M.B., B.Ch. in 188 M.D. in 1888, and M.Ch. in 1890. After house appointmen

at Guy's he settled in surgical practice at Leeds and was appointed to the staff of the General Infirmary. Lawford Knaggs was a member of the Court of Examiners of the Royal College of Surgeons of England for ten years (1911–21), a Hunterian professor in 1923–5, and in 1930 received the rare distinction of the Honorary Gold Medal of the College at the hands of his Leeds contemporary Lord Moynihan, then President, in recognition of his great services to the Hunterian Museum. Among many labours of love at Lincoln's Inn Fields he catalogued and revised the Strangeways collection of specimens illustrating arthritis.

Lawford Knaggs published in 1926 a book, *Inflammatory and Toxic Diseases of Bone*, which reflected his experience both as a practical surgeon and as one who had made an intimate study of the subject from the pathological side. This country has a wealth of specimens in its museums exemplifying various diseases of bone, and to illustrate his theme he made use of that material not only from the extensive collection in his own university of Leeds, but also from the abundant material in the Museum of the Royal College of Surgeons and in the London and Provincial medical schools. The writing of this book was undertaken as a congenial task after Knaggs had retired from active surgical duties. He kept the clinical aspect in the foreground and duly emphasized the practical bearing of the pathology of the subject.

G. T. BIRDWOOD, M.D.

Gordon Travers Birdwood died suddenly at Deal on April 14 at the age of 78; he had practised there for 25 years after his retirement from the Indian Medical Service with the rank of lieut.-colonel. His father was H. M. Birdwood, a distinguished member of the Indian Civil Service, and he was educated at Clifton College, at Peterhouse, Cambridge, and at Guy's Hospital. He qualified in 1892, took his M.A. and M.D. degrees at Cambridge in 1895, and the D.P.H. in 1896. Four years earlier he had gained second place in the entrance to the I.M.S., and he served with distinction in India in the Abor Expedition and in the Waziristan and Chitral campaigns. As principal of the Agra Medical School 1903–10 he completely remodelled the curriculum and enlarged the buildings. His next appointment, which he held for eight years, was to the new chair of midwifery at Lucknow Medical College, and he organized the teaching on the model of the Rotunda Hospital at Dublin. He also had charge of the Babrampur Hospital, and was responsible for many improvements there. He was made a Fellow of Allahabad University and a member of the Child Welfare Committee of the Province. While serving in India Birdwood wrote two books, *Clinical Methods in Tropical Diseases* and *Practical Bazaar Medicines*, which have been much in demand.

On his retirement in 1920 from the I.M.S. he began practice in Deal and Walmer; he was at once appointed surgeon to the newly built Deal and District War Memorial Hospital and until 1937 was its keen and active senior surgeon. He became president of the East Kent Association of Surgeons in 1934 and was for ten years medical officer of the Deal Child Welfare Centre, a work to which he devoted himself whole-heartedly. He gave much attention to the Deal Hospital and its development, inaugurating in 1935 an ophthalmic department, and for seven years was a vigorous member of the committee of management. He had joined the B.M.A. in 1896, was honorary secretary of the Dover and Folkestone Division 1926–9, chairman of the Dover Division 1929–33, and from 1938 till his death emergency officer for East Kent.

Birdwood took a prominent part in the affairs of the town of Deal, where his elder brother, Field-Marshal Lord Birdwood, holds the ancient office of Captain of Deal Castle. He served for six years on the Borough Council, was twice deputy mayor, and had been president of the local Chamber of Trade.

The following well-known medical men have died abroad: Dr. DAVID WOLFSTEIN, professor of psychiatry in the University of Cincinnati, aged 86; Dr. LOUIS B. WILSON, formerly professor of pathology at Minnesota University, aged 70; and Dr. GUSTAV ASCHAFFENBURG, for 30 years professor of psychiatry at Cologne, who died at the age of 78 at Baltimore, where he had been living in exile since 1938.

Universities and Colleges

UNIVERSITY OF OXFORD

An election of two members of the Board of the Faculty of Medicine will be held on June 6. The members elected will come into office on the first day of Michaelmas Term, 1945, and will hold office, the senior for two years and the junior for one year, from that day.

The general medical electorate consists of all Oxford graduates in medicine who are members of Convocation. The Board of the Faculty of Medicine includes two members elected by the general medical electorate who must be members of that body and of whom one at least must be a person engaged in teaching one or more of the clinical subjects of the Faculty.

Nominations of duly qualified candidates for election will be received by the Secretary of Faculties at the University Registry up to 10 a.m. on May 16. Each nomination must be signed by six members of the general medical electorate, and no candidate will be eligible whose nomination has not been received by that date.

UNIVERSITY OF CAMBRIDGE

The Linacre Lecture will be delivered by Prof. E. D. Adrian, O.M., M.D., F.R.S., on Monday, May 7, at 5 p.m., in the lecture-room of the Physiological Laboratory. The title of the lecture is "The Pulsation of the Brain."

The Professor of Anatomy gives notice that applications for the Marmaduke Shield Scholarship in human anatomy are to be sent to the Registrary on or before May 20. The persons eligible are undergraduates of not more than three years' standing from matriculation, and B.A.s of not more than four years' standing from matriculation, who have completed the First M.B. Examination, are qualified in anatomy and in physiology to proceed to the Final M.B., and have also obtained honours in Part I of the Natural Sciences Tripos with anatomy as one of their subjects. Women also are eligible.

Candidates for the Michael Foster Studentship in physiology should send their applications, with a statement of the course of research they propose to undertake, to Prof. Adrian, Physiological Laboratory, on or before June 30.

During the month of March the title of the degree of M.D. was conferred by diploma on Mrs. M. H. D. Gunther, of Newnham College.

UNIVERSITY OF EDINBURGH

At the last meeting of the University Court intimation was made of the receipt of a sum of £3,024 subscribed by patients and other friends of the late Dr. Andrew Graham Ritchie, F.R.C.P.Ed. The sum is to commemorate the high esteem and affection in which he was for many years held by all sections of the community in Edinburgh, by founding a bursary to be awarded annually to an undergraduate in the Faculty of Medicine. The Court gratefully accepted the donation.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Election of Fellows

At a quarterly Comitia of the College held on April 26, with the President, Lord Moran, in the chair, the following were elected Fellows:

S. P. Bedson, M.D., F.R.S. (London); Major-Gen. S. R. Burston, C.B., C.B.E., D.S.O., F.R.C.P.Ed., F.R.A.C.P. (Melbourne, Australia); Sir Ernest Rock Carling, M.B., F.R.C.S. (London); Brig.-Gen. P. R. Hawley, M.D. (U.S.A.); C. H. Whittle, M.D. (Cambridge); S. H. Cookson, M.D. (Bournemouth); J. A. Birrell, M.D. (Bristol); W. A. Robb, M.D. (Exeter); George Fletcher, M.D. (Manchester); C. S. Hallpike, M.B., F.R.C.S. (London); Maurice Mitman, M.D. (Dartford); Arthur Burrows, M.D. (London); R. G. Cochrane, M.D. (Madras); G. W. Bamber, M.D. (London); Ewen Downie, M.D., F.R.A.C.P. (Melbourne, Australia); A. Margaret C. Macpherson, M.D. (London); A. G. Ogilvie, M.D. (Newcastle-upon-Tyne); Philip Ellman, M.D. (London); C. Allan Birch, M.D. (London); Benjamin Barling, M.D. (London); Eliot T. O. Slater, M.D. (Oxford); T. E. Gumpert, M.B. (Sheffield); W. C. Smallwood, M.B. (Birmingham); H. C. Trowell, M.D. (Uganda); C. H. Rogerson, M.D. (Stoke-on-Trent); Stanley Alstead, M.D. (Glasgow); P. R. Evans, M.D. (London); L. J. Davis, M.D. (Edinburgh); Mahmoud Erfan (Cairo); W. H. Kauntze, C.M.G., M.B.E., M.D. (London); W. R. M. Drew, O.B.E., M.B. (London); S. A. Henry, M.D. (London).

Dr. L. G. Parsons and Dr. Donald Paterson were appointed representatives of the College to attend the Conference of the National Association of Maternity and Child Welfare Centres. Lord Moran was elected a representative of the College on the Governing Body of the British Postgraduate Medical School and Sir Arthur Hall a representative on the Board of Governors of Sheffield University. Dr. G. E. S. Ward was appointed an External

Examiner in Medicine for the Fellowship examination of the Faculty of Radiologists. Members were nominated to serve on a dermatology committee. Reports were received from the Consultant Services Committee and from the Paediatric Committee.

New Members

The following candidates, having satisfied the Censors' Board, were elected Members:

T. J. Agius-Ferrante, M.D., Patience E. Barclay, M.B., O. W. Chapman, M.B., J. D. Craig, M.B., Fl. Lieut., R.A.F.V.R., Joyce A. Davies, M.B., Capt., R.A.M.C., H. J. W. Fisher, M.B., G. Garmany, M.B., Surg. Lieut.-Cdr., R.N.V.R., C. C. Houghton, M.B., A. H. Isaacson, M.B., A. E. Jones, M.B., Capt., R.A.M.C., H. B. Kelly, M.B., Monica K. McAllen, M.B., O. Magidson, M.D., G. R. B. Newns, M.B., K. N. V. Palmer, M.B., D. A. R. Pond, M.B., Cynthia M. Redhead, M.B., R. V. Stone, M.B., J. M. Stowers, M.B., R. McL. Todd, M.B.

Licences and Diplomas

Licences to practise were conferred upon the following 139 candidates (including 29 women) who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and who have complied with the necessary by-laws:

E. M. Allen, C. F. Allfrey, E. A. J. Alment, W. McC. Anderson, E. T. Anderton, R. J. Aspinal, D. J. Atherton, C. M. Attwood, D. A. Bailey, R. W. Barr-Brown, H. F. McG. Bassett, A. J. T. Bateson, A. M. H. Bennett, J. P. M. Bensted, A. Bernstein, Diana M. Beyts, M. Binnie, G. L. Bourne, C. W. Bowen, J. H. Boydell, Margaret Bywaters, F. E. V. Cant, Mary N. A. Carlile, H. F. Chapman, Irene M. S. Chappel, H. C. Churchill-Davidson, I. F. J. Churchill-Davidson, Iris B. F. Collinson, J. S. Conway, J. N. C. Cooke, S. Copp, Vera M. Dalley, H. T. Davenport, D. G. Davidson, D. F. Davies, J. A. Dew, A. McK. Dorey, E. L. Dutta, J. C. Edwards, F. T. Falkner, Eve G. Field, S. G. A. Forsyth, S. Galeswski, G. G. Garlick, B. Geoghegan, B. George, W. P. D. Green, Brigit M. Griffiths, Ruth A. Haes, A. E. Hall, N. Harrison, R. A. C. Hart, Joan Haythorne, N. M. O'C. Hewett, Ruth Jackson, D. D. E. Jewitt, P. H. A. Jonason, C. J. M. T. Jones, E. R. Jones, R. S. Jones, M. C. Joseph, C. R. Kirkpatrick, M. Kirwan, M. R. Kohli, Jean V. Lang, R. McK. Laslett, Pamela Laws, A. O. Laymond, Constance G. Lee, P. G. Leese, J. A. Litchfield, A. H. M. Littlewood, Jessie B. Macaulay, H. B. Maliphant, I. G. Manning, P. M. C. Mark, Margaret M. Mason, G. G. Mathew, J. C. Matthews, J. B. Metcalfe, J. N. Micklem, Mary H. Moller, R. E. Moore, J. A. B. Mounsey, Margaret C. Myddelton, R. F. Naunton, Moragh J. Noakes, C. Ormston, Jannette D. Ap-H. Owen, T. E. Owen, Frances I. Panton, Cynthia M. Parrott, R. F. Payne, Noel J. Pease, Thelma M. Phelps, B. Ll. C. Phillips, J. R. H. Pinkerton, J. L. Pring, C. W. A. Pullan, D. A. Pyke, R. J. Rabett, R. Randell, D. Richter, E. G. G. Roberts, R. Ll. B. Roberts, D. J. Rudman, P. I. Rutherford, A. H. B. Rydon, Betty J. Schofield, J. C. Seymour, D. S. Sharpe, Joan M. Sheehan, G. W. Shepherd, N. I. A. Shohet, Betty E. Shortland, P. H. S. Silver, R. B. Sloane, J. Stevenson, H. J. C. Swan, Margaret M. Sweeney, M. T. Sweetnam, J. C. Talbot, B. O. T. Taylor, W. D. G. Tellam, J. M. Thomas, Mary E. I. Upsdell, D. F. van Zwanenberg, C. C. Vidot, O. L. Wade, R. V. Walley, E. McP. Watts, W. Waugh, N. T. Welford, P. W. Wells D. Whitehouse, M. Wigram, D. J. K. Wilkie, G. V. S. Wright, F. J. Yeardsley

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Surgeons of England, to the 14 persons whose names were published in the *Journal* of March 31 (p. 460), as were the names of the 14 persons who were granted Diplomas in Medical Radiology. Diplomas in Child Health were granted to the 18 persons whose names were published in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of April 21 (p. 573).

A Diploma in Medical Radiotherapy was granted to L. M. Shorvon and a Diploma in Medical Radiodiagnosis to J. A. Ireland, both jointly with the Royal College of Surgeons of England.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following lectures will be delivered at the College (Lincoln's Inn Fields, W.C.) at 4 p.m. each day. May 4, Hunterian Lecture by Prof. A. S. Aldis, Injuries of the Pancreas and their Surgical Treatment. May 7, Arris and Gale Lecture by Prof. F. Davies, Early Development of the Human Embryo. May 9, Arris and Gale Lecture by Dr. D. V. Davies, Synovial Membrane and the Synovial Fluid of Joints. May 10, Hunterian Lecture by Prof. R. Watson-Jones, Limb and Spine Injuries due to Flying Accidents. May 11, Arris and Gale Lecture by Mr. Judson T. Chesterman, Some Alterations of the Neuromuscular Balance of the Intestine and their Clinical Significance. May 25, Prof. Arnold Sorsby, Blindness in Great Britain: the Structure of the Blind Population and the Causes of Blindness. May 29, Prof. Sorsby, Penicillin and Gramicidin S in Ophthalmology. May 31, Prof. James Patrick, A Study of Supination and Pronation, with Special Reference to the Treatment of Forearm Fractures. The lectures are open to medical practitioners and advanced students.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the requisite examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P.&S.Glas.:

R. J. G. Aitken, O. E. A. Antia-Obong, H. Baytch, I. J. Bernstein, A. E. R. Campbell, I. G. Campbell, J. D. C. Campbell, H. Camrass, B. Chromow, D. Craig, G. C. Fletcher, A. Gerber, Adrien A. Holder, A. Ingram, J. M. Leith, T. Leven, W. E. Lotfy, Alison M. Matheson, A. A. A. Mazen, J. M. Moore, R. E. Morgan, M. N. Padayachee, F. L. Paterson, T. W. Poole, W. E. Robinson, J. C. Rohan, A. L. Rose, D. H. Rosenberg, I. J. Selikoff, H. J. Shapiro, P. Shenkin, M. Silver, D H. Sinclair, P. Steinlauf, J. Waddell, R. R. Wilson, J. Wotherspoon, M. Zimnowitz.

The following graduates of recognized foreign universities were also admitted licentiates: J. Weiss and W. C. S. von Reybekiel.

Medical Notes in Parliament

National Health Service

Dr. SUMMERSKILL on April 26 said the answers given to her by Ministers on the White Paper on health services had been so unsatisfactory that she felt she must raise the matter again. Last year the House had very carefully debated the White Paper. If it was intended to change the fundamental principles of that White Paper she suggested that the Government should produce another one and that the House should discuss it. Some months after the introduction of the White Paper rumours asserted that the Minister of Health was having further talks with interested bodies which had already discussed the subject. Finally the rumours were substantiated, and a document, which was circulated to over 70,000 doctors in this country, was published. The document was marked "Not for publication." She felt it was so marked because it could not stand the glare of publicity. But it was no longer secret. Newspapers, medical publications, and leaflets of all kinds had given details and had been distributed among doctors and the public.

In the proposals which the Minister had put to the B.M.A there was a complete change in the attitude of the Government towards the new health services. A progressive medical opinion in this country had pictured the health centres as places where doctors would co-operate rather than compete, and where the preventive approach to medicine would be emphasized. In the new proposals which Mr. Willink had put to the B.M.A. it was suggested that there should be a few experimental health centres, but that local authorities should have no clinical supervision; that doctors would come and work there but their work would not be supervised; and that the only contract between the doctor and the local authority would be that of landlord and tenant. The proposal was that the doctor could conduct his private practice in the health centre as it was conducted outside. She and her friends had looked forward to the day when doctors would be employed in the health centres on a full salaried basis. That had all gone.

Mr. WILLINK intervened to say that Dr. Summerskill had given the impression that she referred to a document issued by the Ministry of Health. If she was referring to a document she had received from the B.M.A. as a member of that Association she should make this clear.

Dr. SUMMERSKILL said the document had been published by the B.M.A. and she was going to quote from it.

Mr. WILLINK declared that no document had been published by the B.M.A. One had been sent to members and marked "Not for publication." He gathered this was the document to which Dr. Summerskill referred.

Dr. SUMMERSKILL said the document had been mentioned in the House on many occasions and questions had been put about it. It had been circulated to doctors and its contents were no longer secret. Lay persons throughout the country had seen it, and a leaflet had been issued by another organization. She asserted that this document contained proposals made by Mr. Willink which were to be put to a representative meeting of doctors in the week beginning April 29, and that the time might come to reveal this matter which concerned every man, woman, and child. She had asserted in questions that the Minister had made these proposals to the B.M.A. This he had denied time after time. She claimed that she had shown that the change in the health services was a complete change in principle. The full-time salaried medical service which the House approved last year was to be dropped. There was a suggestion of some part-time service. Otherwise doctors were to be paid on a *per caput* basis. The Minister was proposing to the B.M.A. an extension of the panel system. The Minister in that House had thrown doubts on her veracity and the House must know whether he or she had departed from the truth. She wished to expose a piece of calculated dishonesty. Dr. Summerskill then cited questions which she had put to the Minister and answers given to her, to Mr. Lipson, and to Mr. A. Bevan. She read what she said was the first paragraph of the document, which ended: "They are proposals which the Minister will be willing to put to his colleagues as soon as he knows whether they commend themselves to the medical profession." If Mr. Willink denied again that these were his proposals and that the B.M.A. had any mandate on May 3 when the doctors would meet to consider them he should tell the House now.

Mr. LINSTEAD said the mystery which the House had anticipated had not been disclosed. He put a completely different interpretation upon the statements made by the Minister from

that which had been given them by Dr. Summerskill. He thought Mr. Willink had said: "I have had discussions with the B.M.A. which cannot commit my colleagues in the Government and cannot commit the members of the B.M.A. Let the Negotiating Committee talk to the doctors and see if they agree. If they do I will talk to my colleagues in the Government and see if I can persuade them to agree. Until I have talked with my colleagues I cannot be certain that these proposals will commend themselves to the Government." The debate in the House on March 17, 1944, had shown that the proposals came under considerable criticism. Members on the Conservative side of the House regarded the civil-servant doctor as one of the big flaws in the original proposal. They did not wish to see the doctor in the Civil Service or the patient in the "pigeon-hole." The House was in no way committed to the White Paper by the resolution which it had passed. He added that a year was a long time for consideration of such proposals by the B.M.A., and when that body had finished its discussions next week members ought to be put in full possession of the fact so that the House could turn its attention to the final form which the health service was to take.

Mr. STOREY asserted that Dr. Summerskill had put a mischievous view before the House. Mr. Willink had taken a common-sense course. He discussed the proposals with the three bodies likely to offer constructive criticism—the B.M.A., the British Hospitals Association, and the local authorities. Mr. Storey said he himself had seen certain of the alternative proposals which had been put before one of these bodies. In his opinion they went a long way to improve the White Paper proposals.

Mr. MESSER asked whether Mr. Storey agreed that the B.M.A. should have done what the British Hospitals Association and the local authorities had done and not made public the negotiations.

The Minister Replies

Mr. WILLINK said he was not surprised at the violence of Dr. Summerskill's language nor that she appeared to show ignorance of the steps to be taken in working out a service of this comprehensive nature. What surprised him was her ignorance of the White Paper itself. The proposal of a comprehensive health service had been initiated by the Government in a speech by Sir John Anderson in Feb., 1943. In the following twelve months there were discussions which the White Paper did not purport to sum up. Nor did the White Paper purport to reflect any agreement or represent any view reached in those discussions, which would be inconsistent with the terms on which the discussions were undertaken. Parliament had understood that, as soon as the White Paper was published and debated, detailed discussions would follow. The White Paper said on page 77 that it would serve as a focus for detailed discussion. That discussion had since been going on and was going on still. Mr. Willink added that no member of the medical profession had disclosed to him the document to which Dr. Summerskill had referred. Was it wrong to obtain general agreement to a scheme? Was Parliament or the public being treated unfairly? The Government had been greatly helped by the discussion of the White Paper by the Commons and the Lords. They were now discussing it more widely. They had reached no finality. The proper course was to come to a stage where the discussion had gone far enough and the Government could consider where those discussions had led them. Legislation would then be introduced. The whole medical profession, those interested in voluntary hospitals, and those interested in the work of local authorities could not discuss these matters with Mr. Johnston and himself. They sent their spokesmen, and these spokesmen desired to report on the progress of the negotiations. In four sections of interested opinion—the local authorities, the voluntary hospitals, the medical profession, and the dental profession—this was going on at the moment. But there were no proposals. Mr. Johnston and he had not reached a stage when they could put the whole thing together to place it before their colleagues.

Dr. SUMMERSKILL asked whether the doctors should not have been called to the meeting of the following week believing that Mr. Willink was willing to put these proposals [in the document] if they commended themselves to the medical profession.

Mr. WILLINK said he could take no responsibility for the contents of the document, which he had not seen, which was not intended for his eyes, and had not been published. It was a document which was perfectly proper to have come into existence, but its publication was unfortunate and regrettable. That publication had nothing to do with the negotiating body of the medical profession. Nothing similar had occurred in the other bodies with whom he had discussed these matters.

Dr. MORGAN said the right thing had been done.

The debate then concluded.

Committee on Medical and Nutritional Problems

Replying on April 17 to Sir E. GRAHAM-LITTLE, Mr. Mabane said the following were at present members of the standing committee of the Ministry of Health on Medical and Nutritional Problems. This committee was set up in the early part of 1941 and had since that date been consulted by the Ministry of Food on many questions connected with food and health.

Ministry of Health.—Sir Wilson Jameson (Chairman), Mr. P. N. R. Butcher, Dr. W. A. Lethem, Dr. H. E. Magee, and Dr. D. M. Taylor.
Ministry of Food.—Sir Jack Drummond and Lord Horder.
Board of Education.—Dr. J. Alison Glover.
Medical Research Council.—Sir Edward Mellanby, Prof. S. J. Cowell, and Dr. B. S. Platt.
Department of Health for Scotland.—Dr. A. Davidson.
Ministry of Agriculture and Fisheries.—Mr. R. G. R. Wall.
Department of Scientific and Industrial Research.—Dr. C. S. Hanes.
Ministry of Supply.—Dr. A. J. Amor.
Ministry of Fuel and Power.—Dr. S. W. Fisher.

Adult Population of Great Britain

In reply to Sir E. Graham-Little, Mr. WILLINK stated that the total adult population of England and Wales at June 30, 1944, the date of last ascertainment, inclusive of the armed Forces of the country temporarily abroad and exclusive of the armed Forces of Dominions, Colonies, and foreign countries temporarily present in the country, is estimated at approximately 30,104,000. The corresponding figure for Scotland is approximately 3,490,000. The adult civilian population in Northern Ireland at that date is estimated at approximately 820,000.

Medical News

A memorial service for Sir Hubert Bond will be held in the chapel at Long Grove Hospital, Epsom, to-day (Saturday, May 5) at 12 noon.

The Czechoslovak Medical Association and the Association of Austrian Doctors in Great Britain are holding a medical film show to-morrow (Sunday, May 6), at 3 p.m., in the Hastings Hall, B.M.A. House, Tavistock Square, W.C. Programme: (1) Surgery in Chest Diseases, (2) A Rare Operation, (3) Red Army Hospital. Guests will be welcome.

On Tuesday, May 8, at 2.30 p.m., at the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., Mr. Eardley Holland, P.R.C.O.G., will give a Chadwick Lecture on the importance of a maternity service in the life of the nation. Admission is free; tickets are not required.

A paper on "Infantile Paralysis" will be read by Dr. F. M. R. Walshe before the Royal Society of Arts (John Adam Street, Adelphi, W.C.), on Wednesday, May 9, at 1.45 p.m.

A general meeting of the Tuberculosis Association will be held at 26, Portland Place, W., on Friday, May 11, at 3.30 p.m., when there will be a discussion on "Pregnancy and Tuberculosis," to be opened by Dr. M. H. Logg and Miss Josephine Barnes, F.R.C.S. The date of this meeting has been changed from May 18.

A week-end industrial course, for industrial medical officers of health, will be held at the London School of Hygiene and Tropical Medicine (Keppel Street, W.C.) on Saturday and Sunday, May 12 and 13. The programme is as follows: May 12, discussion on "The Value of Early Diagnosis," with contributions, at 2 p.m. by Dr. A. J. Amor on "The Clinical Approach to Industrial Medicine," and at 3.30 p.m. on "The Early Investigation of the Industrial Environment" by Mr. R. F. Milton. On May 13, at 10.30 a.m., Dr. Donald Hunter will speak on "The Early Diagnosis of Industrial Diseases"; at 11.45 a.m., Prof. Ida Mann, on "The Early Diagnosis of Diseases and Injuries of the Eye"; and at 2.15 p.m., Lieut.-Col. G. R. Hargreaves will discuss "Personnel Selection and its Relationship to Mental Health." The fee of £1 1s. for the course and 2s. 6d. if lunch is required on the Sunday should be sent to the secretary, London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, by May 7.

A meeting of the South Wales Branch of the Institute of Physics will be held on Saturday, May 12, at 2.30 p.m. in the Physics Department of the University College, Cathays Park, Cardiff, when Prof. W. V. Mayneord will lecture on "The Use of Infra-red Radiation in Medicine." The meeting will be open to visitors.

Dr. H. D. Kay, F.R.S., will give an address on "The Secretion of Milk" before the Royal Institution (21, Albemarle Street, W.) on Friday, May 18, at 5 p.m.

The Industrial Welfare Society (14, Hobart Place, Westminster, S.W.1) has issued a pamphlet, *Plan for Reinstatement*, at the price of 1s. post free. It has been planned to cover a number of points in the Government's publication *Release and Resettlement*, which is issued to Service men and women to inform them of the official arrangements being made for their resettlement after discharge. An appendix offers suggestions for a "Reinstatement Record Form"—indispensable for all firms' reinstatement schemes.

A meeting of St. Marylebone practitioners, arranged by the St. Marylebone Medical Committee under the chairmanship of Dr. Geoffrey Marshall, will be held at the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., on Wednesday, May 16, at 8.30 p.m., to discuss important matters arising out of the Special Representative Meeting of the B.M.A. and to make recommendations.

Ninety-five English medical students have gone to Europe to help in the relief of starvation. Fifty Scottish students are standing by for the same purpose.

Major-Gen. Sir Ernest Cowell was last week admitted to the freedom of the borough of Croydon, being the first medical man among the nineteen upon whom this honour has been conferred.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* measles notifications fell during the week by 22,574 cases, and those for scarlet fever by 128; whooping-cough was more prevalent by 191 cases, and dysentery by 157.

Lancashire had 36 fewer cases of scarlet fever than last week. The largest local variations in the returns of diphtheria were increases of 12 in Staffordshire and 10 in Warwickshire, and a fall of 14 in Cheshire. Two local outbreaks of diphtheria, one in the village of Abergynolwyn, Merionethshire, and the other in Northumberland, Amble U.D., persist, and the local authorities are taking measures in an attempt to control the outbreaks. A small rise in whooping-cough occurred in all regions except the south-western. The notifications of measles fell by over 100 in fifteen counties, notifications being lower than last week by the following numbers: Yorks West Riding 520, Leicestershire 318, Middlesex 206. A rise of 170 occurred in Monmouthshire, of 133 in Kent, and of 111 in Glamorganshire.

Notifications of dysentery were high. In Middlesex cases rose from 4 to 50, and in Kent from 3 to 36. The other large returns were Lancashire 64, London 32, Warwickshire 22, Gloucestershire 19, Staffordshire 18, Essex 18, Surrey 17, Yorks West Riding 16, Suffolk 15, Derbyshire 13, Devonshire 13, Cornwall 13, Hertfordshire 10, Oxfordshire 10, Northumberland 10.

In *Scotland* there were 177 more notifications of measles than last week, 127 more of whooping-cough, 20 more of scarlet fever, and 15 more of dysentery. The first three of these diseases were especially prevalent in Glasgow. The largest returns for dysentery were Glasgow 48, Edinburgh 39, Renfrew County 24, Aberdeen 14.

In *Eire* there were 26 more cases of measles than last week, and 7 more of diphtheria, but 23 fewer of whooping-cough. There was an outbreak of 24 cases of measles in Tipperary, Thurles U.D. An outbreak of diphtheria has occurred among the turf workers on the Lullymore Bog in Kildare.

In *Northern Ireland* the notifications of diphtheria were 8 higher than last week, and of scarlet fever 18 higher. The increase in scarlet fever was confined to Belfast C.B. The 22 cases of diphtheria involved fourteen registration areas.

Quarterly Returns for England and Wales

The birth rate during the December quarter of 1944 was 17.1 per thousand, the highest fourth-quarter rate since 1924; the average for this quarter for the five years 1938–42 was 13.9. Infant mortality was 44 per thousand live births—9 below the average of the ten preceding December quarters, The general death rate was 11.8 per thousand, compared with 14.6 for the fourth quarter of 1943, and the same as the average for the December quarters of 1938–42. The natural increase, excess of births over deaths, was 54,958.

The provisional returns for the whole year give the birth rate as 18.0 per thousand, which was 1.5 above that for 1943, and the highest recorded since 1925. Infant mortality was 46 per thousand live births—the lowest rate recorded—and was 3 below the rate of 1943, the previous lowest level. A further small increase in deaths from diarrhoea and enteritis under 2 years of age was recorded; the totals for 1940–4 are 2,891, 2,985, 3,415, 3,517, 3,600. The general death rate was 11.9 per thousand, being 0.2 below the rate for 1943, but 0.3 above that for 1942. The excess of live births over deaths was 253,040; the excess for 1943 was 181,801, and the average natural increase for the five preceding years was 102,620.

Week Ending April 21

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,356, whooping-cough 1,212, diphtheria 565, measles 15,901, acute pneumonia 573, cerebrospinal fever 73, dysentery 523, paratyphoid 3, typhoid 5.

No. 15

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 14.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1945 (a)	(b)	(c)	(d)	(e)	1944 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	70	4	28	3	5	96	5	35	1	2
Deaths		2	3				1	2		
Diphtheria	438	14	111	100	22	616	27	201	100	26
Deaths	6	—	1	5	—	9	1	2	4	—
Dysentery	463	32	180	—	—	179	21	114	—	6
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	—	—	—	—	2	—	3	—	—
Deaths		—					—			
Erysipelas			44	13	3			49	12	6
Deaths		1					—			
Infective enteritis or diarrhoea under 2 years				7					8	
Deaths	49	7	3	9	4	63	12	21	13	2
Measles*	20,342	1651	394	86	35	2,578	273	239	382	3
Deaths	12	1	4	1	1	3	—	—	4	1
Ophthalmia neonatorum	63	5	15	1	—	67	3	25	—	—
Deaths										
Paratyphoid fever	2	—	—	1 (B)	—	2	—	1 (B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	664	46	4	2	5	983	62	10	2	4
Deaths (from influenza)	13	—	1	—	—	27	4	1	2	—
Pneumonia, primary			172	30				273	36	
Deaths		33		7	6		68		6	15
Polio-encephalitis, acute	—	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	5	1	1	—	—	4	—	—	—	—
Deaths		—					—			
Puerperal fever		4	13		—		3	15		—
Deaths										
Puerperal pyrexia‡	131	9	11	—	—	163	5	12	3	1
Deaths		—					1			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,215	57	207	20	62	1,870	89	236	24	75
Deaths	1	—	—	—	—	—	—	—	—	—
Smallpox	—	—	—	—	—	1	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	8	—	1	11	—	5	1	1	13	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,234	56	192	33	26	1,865	176	56	73	16
Deaths	3	—	3	1	—	13	3	—	3	2
Deaths (0–1 year)	367	45	52	42	27	392	53	87	33	25
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,480	648	632	226	132	4,699	728	665	248	139
Annual death rate (per 1,000 persons living)			14·3	14·6	§			15,3	16·2	§
Live births	6,643	740	830	441	269	7,353	861	975	470	287
Annual rate per 1,000 persons living			16·6	28·5	§			19·8	30·7	§
Stillbirths	211	20	21			256	19	37		
Rate per 1,000 total births (including stillborn)			25					37		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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ANY QUESTIONS?

Post-herpetic Symptoms

Q.—*A patient had a severe attack of orbital shingles, not involving the cornea, last October, and is still troubled with intolerable pricking and tingling along the distribution of the supra-orbital branch of the fifth nerve. Various treatments have failed to give relief. What further measures can be tried?*

A.—Irradiation of the skin with ultra-violet light is worth a trial. *X*-ray irradiation can also be tried, but is often disappointing. If the skin is hypersensitive, alcohol injection of the supra-orbital nerve would probably give relief. A preliminary injection of procaine would show whether anaesthetization would be likely to help.

Sterilizing Needles in Oil

Q.—*What are the details for sterilizing needles by immersion in boiling oil?*

A.—The following are the instructions for sterilizing syringes and needles in hot oil given in M.R.C. War Memorandum No. 6, 1942: "The apparatus necessary consists of a metal cup holding 2–3 oz., held fixed in a rigid stand above a small adjustable gas flame; a thermometer reading to 200° C. clamped to the stand and dipping into the oil (liquid paraffin or olive oil) in the cup. To sterilize a Record type of syringe for use, the needle is taken off and oil at a temperature between 120° C. and 130° C. is rapidly drawn into the syringe. When the plunger is drawn up to the full extent the syringe should be removed from the oil and inverted, so that the hot oil reaches every part of the inside of the syringe. The oil is then expelled, and the process repeated two or three times. Then the needle is affixed, wholly immersed in the oil, and oil is drawn in and out a few times. The syringe is now ready for use. The whole process is complete in 30 seconds or less. When sterilized the syringe can be kept ready for use by wrapping the needle in a small piece of sterile lint. Care is necessary in adjusting the gas flame so that the temperature does not exceed 160° C., otherwise there is an unpleasant smell of burning oil. After some weeks the oil becomes seriously discoloured, and it should then be renewed. This method differs from the other methods of sterilization in that only the needle and the *inside* of the syringe are sterilized. To sterilize needles alone, the cleaned needle is held in the oil for half to one minute. It is then removed with forceps and fixed to the syringe or stored in a suitable container. By this procedure an ordinary steel needle may be in daily use for months with occasional sharpenings on a needle stone."

Posture and Heart Disease

Q.—*Why are heart cases invariably sat up when it is more restful to the heart to lie down?*

A.—Presumably by "heart cases" is meant patients with heart failure. The sitting posture is best because to some extent it relieves any tendency to increase in venous pressure, and also the congestion in the pulmonary circulation. Patients with any degree of severity of heart failure instinctively sit up in order to breathe to the best advantage. There is also less upward pressure from the abdomen on the diaphragm. Plenty of patients with heart lesions who have no failure can lie flat quite comfortably.

Cholecystitis and Coronary Sclerosis

Q.—*The association of cholecystitis with toxic myocarditis is frequent. Is toxic myocarditis with or without coronary sclerosis a contraindication to cholecystectomy? Alternatively, will cholecystectomy arrest or reverse the toxic changes in the myocardium?*

A.—The first sentence rather begs the question. The association of toxic myocarditis with cholecystitis is *not* frequent, and there is no proof that disease of the biliary tract has any influence on the production of heart disease. What *is* frequent is the association of cholecystitis with coronary sclerosis. There is considerable evidence that the diseased gall-bladder increases the liability to attacks of angina, presumably by acting as a reflex trigger mechanism; and, other things being equal, it is for this reason wise to remove a diseased gall-bladder in angina pectoris. There is no proof that patients live longer as a result of the operation, but they certainly live more comfortably.

Mooren's Ulcer

Q.—*What is the most up-to-date and/or successful treatment for rodent ulcer (Mooren's ulcer) of the cornea?*

A.—True Mooren's ulcer is so resistant to treatment that any success makes one doubt whether the diagnosis is correct. Two recent successes have been obtained—the first by the use of sulphathiazole ointment, 5%, with bandaging of both eyes, and the second (where the other eye had been enucleated for the same condition) by carbolization, conjunctival slide, and tarsorrhaphy all at the same time. Application of radium has been suggested, but should be used with extreme care owing to the vulnerability of the ocular tissues to radium. Short-wave and ultra-violet-light therapy have not met with success.

Catgut and Wound Infection

Q.—*What is the pathological mechanism involved in the predisposition to wound infection by the use of catgut? Is it merely that catgut may not be sterile?*

A.—Is it true to say that there is predisposition to wound infection by the use of catgut? The process of absorption of catgut is one of inflammation, with exudation, round-cell infiltration, and the appearance of foreign-body giant cells, but this does not signify infection. Nor is it correct to assume that catgut cannot be sterilized. When prepared for surgical use under the conditions laid down by the Ministry of Health, catgut is sterile, and there is now no excuse for the surgeon who uses catgut which is unreliable in this respect.

Mervyn Gordon Test for Smallpox

Q.—*What is the Mervyn Gordon test for smallpox, and to what extent is it reliable?*

A.—This is a flocculation or precipitation test. The one usually employed is Craigie and Tulloch's modification of the Mervyn Gordon test. A series of saline extracts of dried crusts from a suspect case are added to various dilutions of serum obtained from a rabbit immunized against vaccinia. If flocculation occurs in the mixture after incubation it indicates the presence of the smallpox or vaccinia virus. No flocculation occurs with a suspension obtained from chicken-pox crust. The test is thus of practical value in distinguishing chicken-pox from smallpox in the crusting stage of the disease.

Prognosis in Otosclerosis

Q.—*What advice should be given to a patient regarding the prospects of relief from deafness due to otosclerosis?*

A.—The general opinion is that no operation yet devised has given worth-while results in more than a minute proportion of cases. It is possible that improved technique will in the next few years give results which justify the small but definite operative risk—but that time has not yet arrived.

Polyneuritis in Pregnancy

Q.—*Sometimes pregnant women—usually the hard-working poor, but not necessarily under-nourished—suffer from a type of neuritis affecting the hands and occasionally extending up the arms. There is a numbness and sometimes "deadness" in the fingers, accompanied perhaps by either swelling or pain. What are the cause and treatment of this condition?*

A.—The patients described in this question are undoubtedly suffering from polyneuritis, a condition which is very common in pregnancy. The most severe examples are seen in cases of hyperemesis gravidarum, and the neuritis may come on after apparent recovery. Severe cases have also been reported in patients not suffering from hyperemesis. Deaths from this condition have been reported, and in other cases the nerve lesions have become irreversible and have led to permanent paralysis. These serious cases are fortunately *very uncommon*, but milder types of the disease are common and lead to a good deal of suffering and disability.

Polyneuritis of pregnancy has now been established as being due to deficiency of vitamin B_1. It has been shown by Helen S. Lockwood, S. Kirkwood, and R. S. Harris (*Amer. J. Obstet. Gynec.*, 1943, **46**, 358) that the requirement of thiamine (vitamin B_1) is increased threefold in pregnancy and the puerperium. In addition, a high intake of carbohydrate such as is likely in a wartime dietary will further increase the thiamine requirements. Another possible factor is deficiency of hydrochloric acid in the gastric juice, and it was shown by M. B. Strauss and W. J. Macdonald (*J. Amer. med. Ass.*, 1933, **100**, 1320) that achlorhydria is commonly found in

association with polyneuritis of pregnancy. It is suggested that the questioner should treat his patients with large doses of vitamin B_1. L. S. McGoogan (*Amer. J. Obstet. Gynec.*, 1942, **43**, 308) recommends administration of 50 to 100 mg. of thiamine hydrochloride daily. In addition hydrochloric acid (one fluid drachm of acid. hydrochlor. dil.) may be given with meals. This should be taken well diluted in water or lemonade.

Pregnancy after Perineal Operations

Q.—*A woman of 30, healthy and strong, who was confined a year ago, has just been operated on for cystocele, rectocele, and perineorrhaphy. What advice does one give on future confinements? How soon may she safely conceive, and are there any special precautions? Her only confinement, which took place a year ago as above mentioned, was a non-instrumental delivery, but she had seven stitches. Before the operation she was fitted with a ring, but even a No. 12 dropped out when she stood up.*

A.—She should wait at least six months, and preferably one year, from the time of the operation before embarking on another pregnancy. If the cervix was not amputated there is no reason to expect any special complications during another pregnancy, but during the second stage of labour the vagina and perineum may not distend easily, because of the scars. The chief concern should be to avoid a recurrence of prolapse, and to this end episiotomy should be carried out as soon as the head is beginning to distend the perineum. The incision should be a liberal one, beginning at the fourchette just to the side of the perineal scar and extending backwards and slightly outwards to the side of the anus. It will, of course, need to be carefully sutured, layer by layer.

Radio-active Hair Tonic

Q.—*A patient has been using a proprietary hair tonic for which it is stated that: "The preparation is activated by actual radium element to a radio-activity of 2,000 Macbe units = 555,60 millimicro-curies (±20%) per gallon." I should be glad to know what this means, and whether any injurious effect is likely to result from the use of the "tonic." Is there any Act operating which prevents the sale of radio-active substances to the general public?*

A.—The stated radium content of the preparation is about 10^{-4} mg. per litre, and no local injurious effect is therefore likely to be observed unless the preparation was continuously used for several years. The gamma-ray activity, however, approaches the tolerance dose of 10^{-5} r/sec. recommended as the safety limit by the British *X*-ray and Radium Protection Committee, so that some general effect, such as a leucopenia, might be observed after prolonged use. So far as I know, there is no Act prohibiting the sale of radio-active substances to the general public.

A Case of Arthritis

Q.—*A woman, aged 74, two years ago had a serious illness, which started with severe facial neuralgia. Teeth were x-rayed and 6 were extracted. The neuralgia became worse, the temperature began to rise, never higher than 102° at night, but continuing for 2 to 3 months. This was diagnosed as a subacute septicaemia following tooth extraction. After sulphonamide therapy the fever subsided and the neuralgia disappeared. About a year ago pain and stiffness in the right thigh began, especially after walking a short distance and uphill. The pain is located on the outer side of the thigh, to a lesser extent on the inner side and back. Some years ago the ankle on the same side was sprained, and the plantaris has been ruptured twice. Flexing the thigh causes pain, so that going upstairs means one step at a time using only the left leg. There is a thickened plaque to be felt on the outer side and middle of the thigh, about 2½ in. in diameter—this can be dispersed by fairly heavy massage. It is very tender to the touch. There are other tender spots, one near the great trochanter, sometimes one in front near the patellar attachments, but no obvious lumps at these places. The general health is good.*

A.—The details of the case are interesting though difficult to link up into a complete and uniform picture. I think there is little doubt that there is arthritis of the right hip, possibly infective at the outset; but now the active phase has died down and there is a chronic osteo-arthritis which, as is so often the case, gives rise to pain referred to other parts of the thigh rather than to the joint itself, comparable with the referred pains which characterize tuberculous arthritis of the hip in childhood. *X*-ray examination is, I think, essential to the formation of a definite diagnosis, but in its absence, and without the opportunity of making a clinical examination, I feel that this view of the case is correct.

The thickened plaque on the outer side of the thigh is not easily explained; it would appear to be associated with the ilio-tibial band and possibly due to the bursa which often lies between it and the femur. If there is effusion into this bursa it might be dispersed by heavy massage. The congested fatty layer described by Copeman and Ackerman as occurring in the back might also give rise to the same symptoms, but anything like a formed fibrositic nodule could not be got rid of so easily. Its tenderness and tendency to recur would be readily explained by a bursitis or tenosynovitis. Flexing the thigh would cause pain in arthritis of the hip, but grating is unlikely at this stage, and in any case is not commonly felt in osteo-arthritis of the hip. As I have frequently to emphasize to students, trouble in the hip causes pain going uphill, whereas if it is in the knee the pain is felt when going downhill; referred pain in the knee is usually at the inner side and is due to being referred along the obturator nerve which supplies both joints. Fibrositis is a common accompaniment of osteo-arthritis, usually peri-arthric in site but not invariably so, and is certainly affected by climatic conditions, so there is some prospect of relief in a dry climate. A walking calliper seems to be the most likely method of relieving the pain and allowing the joint to settle down, but some degree of permanent lameness is, I think, inevitable. Some patients regard a calliper, however, as worse than the trouble it is designed to treat. The less walking the better, but daily movement of the joints to their full extent is necessary to prevent their becoming limited in range.

Drugs, except aspirin, are not likely to help, but heat and massage will be useful, and the best form of heat will be hot hip baths with washing soda—a small handful to the gallon would be strong enough. If the soda irritates the skin mag. sulph. might be a good alternative. The history of previous damage to that leg will account for its being attacked now. It is usually the damaged joint that becomes the seat of further trouble and not the sound ones. At the age of 74 the possibilities of relief are limited.

LETTERS, NOTES, ETC.

Old Books in the Market

The library of the late Sir Buckston Browne, F.R.C.S., which is to be sold at Messrs. Sothebys on May 8, contains a few surgical and anatomical treatises of the seventeenth and eighteenth centuries; three of these are of bibliological interest, two of them of special appeal to a urologist such as Sir Buckston. These three are the first French translation of Sir Thomas Browne's *Religio Medici*, published in 1668 under the title of *La Religion du Medecin;* the anonymous tract published from Wyllyam Myddyton's press (in 1544), "Here begynneth the seynge of Urynes of all coloures that Urynes be of, with the Medycines annexed to every Uryne and every Uryne his Urynal much profitable for every man to knowe"; and Robert Record's "Urinal of Physick, whereunto is added an ingenious treatise concerning Physicians, Apothecaries and Chyrurgians" published by Gartrude Dawson in 1651. A number of the eighteenth century books are connected with the Plague.

A Seminological Laboratory

Practitioners who deal with sterile couples may be interested to know of a new laboratory which offers facilities for seminal examinations and for post-coital examination of the cervical mucus. Increasing numbers of women who attend Family Planning Association centres are seeking advice on the treatment of involuntary sterility. Whilst this type of case has been welcomed at the clinics, in most cases advice given has inevitably been curtailed by the lack of facilities for getting competent seminal investigations at fees suitable for such patients. The Sub-Fertility Committee of the Family Planning Association has therefore been working to establish a pathological laboratory, which has now been opened under the charge of Dr. H. A. Davidson, at 33, Wimpole Street, London, W.1. There have, up to the present, been very few laboratories in this country which include in their technique measurements of the viability of the spermatozoa, both *in vitro* and in the cervical canal. This factor may be of the utmost importance in certain cases of sterility. Studies in seminology have been carried on in connexion with the Exeter Clinic by Mrs. Clare Hervey, and work at the London laboratory is expected to develop along similar lines. Workers on sterility have always been hampered by differences in methods of examining semen, which make it impossible to compare results from different laboratories. Mrs. Hervey's aim has been to evolve a standard technique which should overcome this difficulty. If, as the Association intends, it becomes possible to open laboratories in other parts of the country, a large amount of comparable data should soon be collected for study. The London laboratory will undertake investigations for clinic patients at especially low rates. Its services are also available for private practitioners who wish to have cases investigated.

Calcification of Supraspinatus Tendon

Dr. P. W. HAMPTON (I.O.M.) writes: I was interested in the answer on calcification in supraspinatus tendon in the *Journal* of March 31 (p. 468). During the last war I was consulted by an elderly officer who complained of pain in the shoulder which woke him at night if he happened to turn over on that side. *X*-ray examination showed what looked like a bony spur growing from the greater tuberosity of the humerus. At operation the spur was found to be somewhat pultaceous and was easily scraped out with a Volkmann spoon. I took it to be a tophaceous deposit, and, on later asking the patient if he had ever suffered from gout, he told me that some years previously he had had a gouty testicle removed.